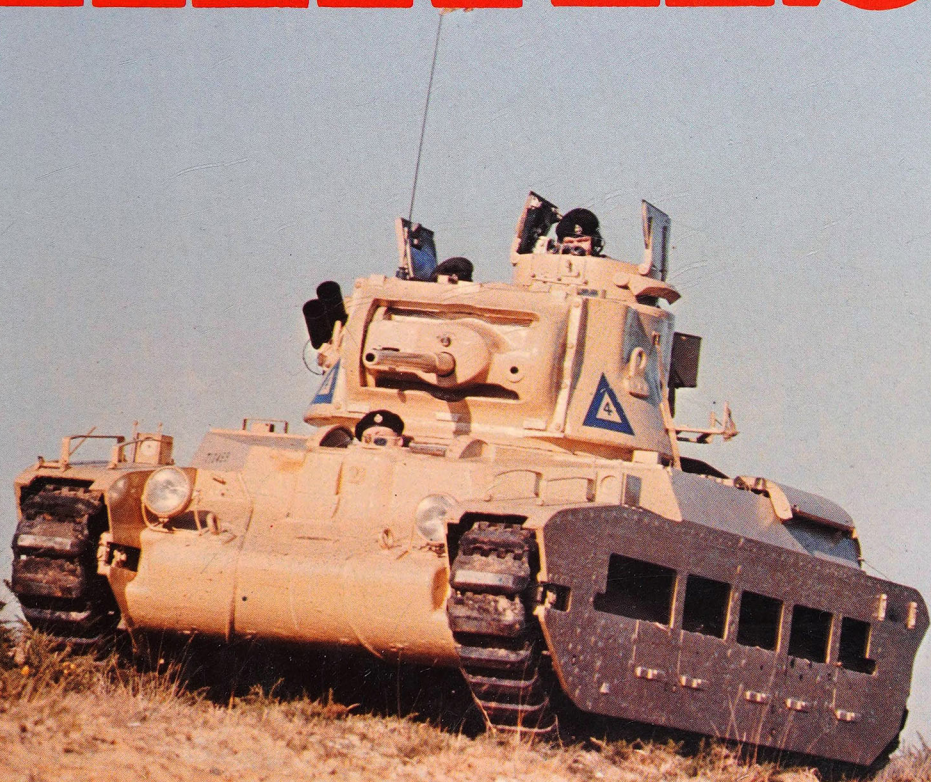


GREAT BATTLE TANKS



SIMON DUNSTAN

Great Battle Tanks

SIMON DUNSTAN

The concept of the armoured fighting vehicle is as ancient as warfare itself. It is based on three main characteristics — firepower, protection and mobility. The task of a tank designer is to balance these three conflicting elements to form an effective fighting machine. Too much weight of armour and mobility would be impaired as few bridges, railway systems or transporters could bear the vehicle. Too little armour protection would make the tank vulnerable and reduce crew morale. Too little firepower would make the tank prey to other tanks. Thus a modern Main Battle Tank must have all three ingredients carefully balanced.

Great Battle Tanks charts the progress of the tank from its earliest World War I days, through its youth amongst the mud and trenches of the World War I, past its coming of age during World War II to the most modern developments that show its maturity as a weapon — in the shape of the Chieftain, Leopard, T-72 and American M-1 General Abrams. It does so with numerous photographs and comprehensive data tables.

Design by Ian Allan Studio

£3.95

GREAT BATTLE TANKS



GREAT BATTLE TANKS



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*Previous page: Leopard 1A4, the current production model.
/ Krauss Maffei*

*Below: M60A1 of the Israeli Army in the Sinai Desert, Yom
Kippur War, October 1973. / Camera Press*



Dedication: For Alexis

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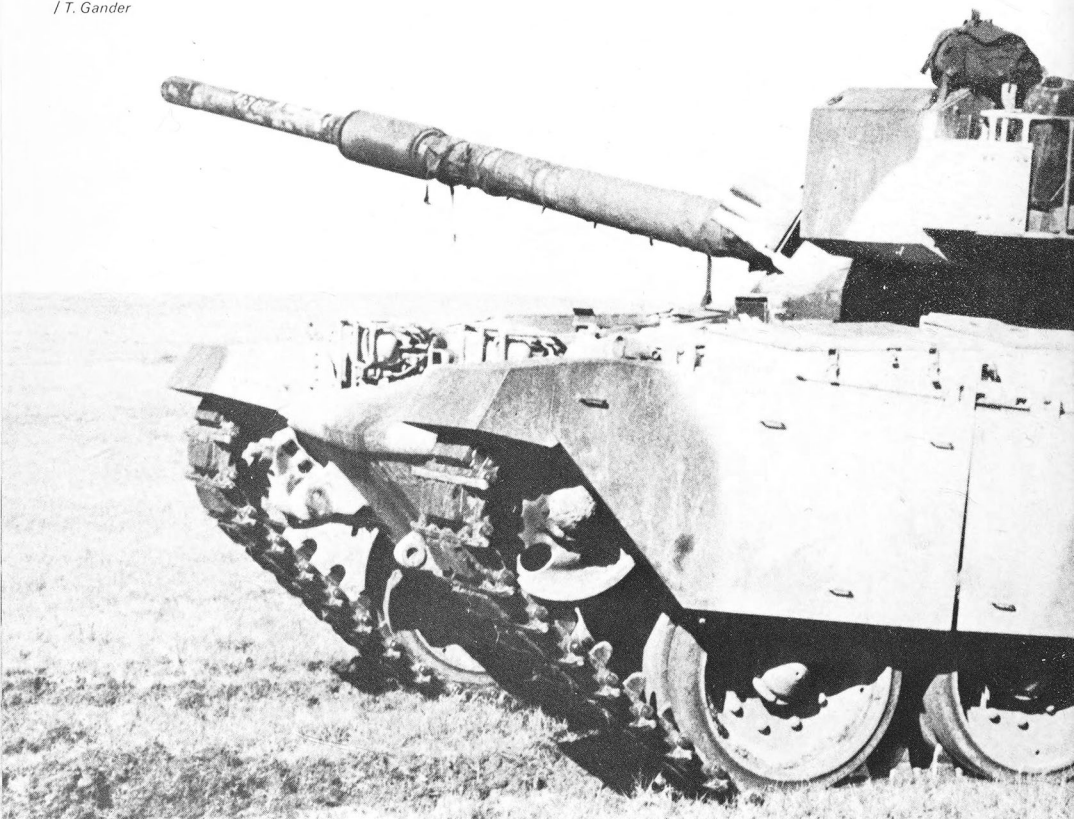
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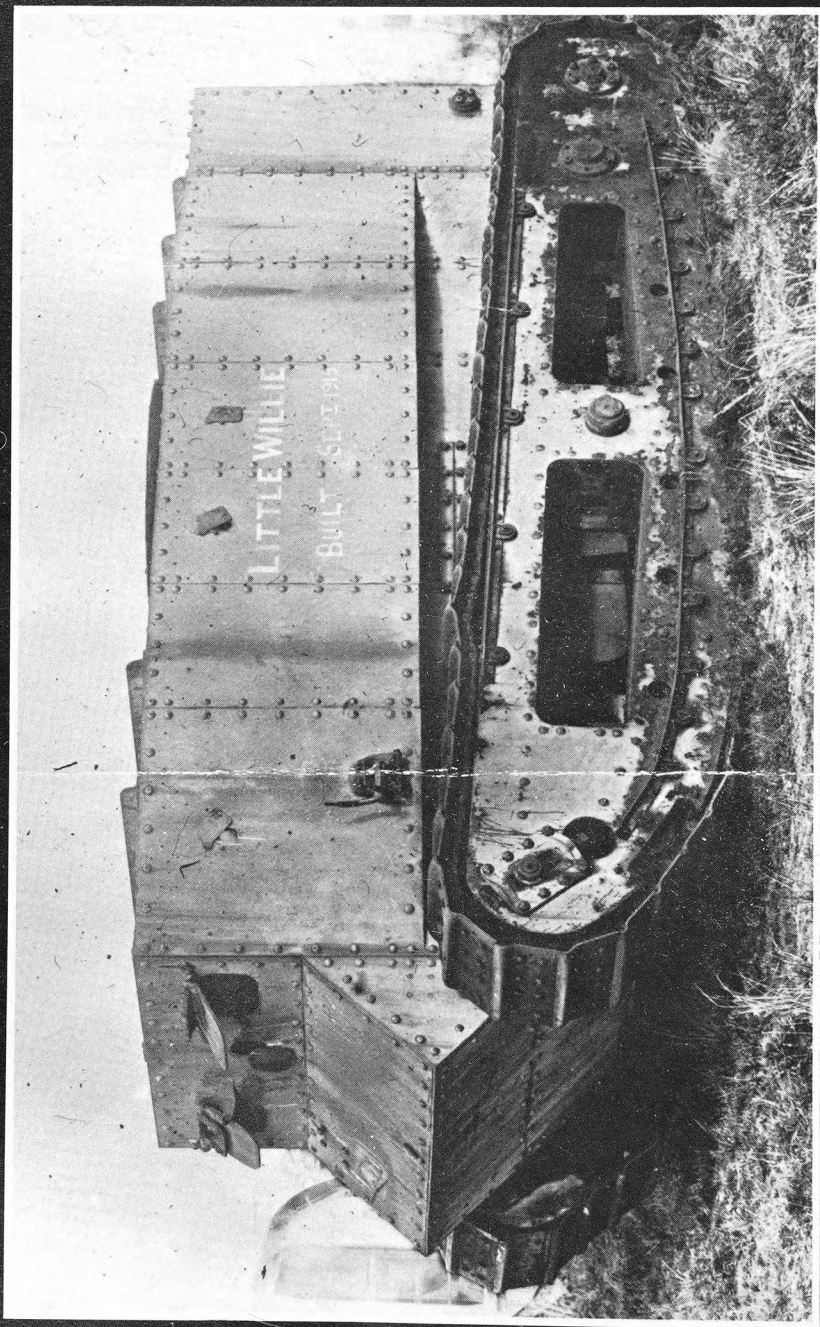
**Chieftain Mark 3 of the British Army
Training Unit Suffield, Canada.**
/ T. Gander



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Introduction

Left: Little Willie, the progenitor of the tank, was built by William Foster's of Lincoln and completed in September 1915.

The concept of the armoured fighting vehicle is as ancient as warfare itself. It is based on three main characteristics — firepower, armour protection and mobility. The task of the tank designer is to balance these three conflicting elements to form an effective fighting machine. From the war chariots of the Assyrians of the 1st millennium BC, through Hannibal's war elephants to the armoured knights of the Middle Ages and the ingenious designs of Leonardo da Vinci, all sacrificed one or more of these factors to attain the third. Based as they were on the motive power of animals, high mobility could only be achieved without protection but as soon as armour was added, mobility was lost. Firepower was always limited to that capable of being manually operated. It was not until the invention of an efficient propulsion unit, the internal combustion engine, that there was sufficient power in a compact form to propel a vehicle able to mount effective offensive weapons whilst at the same time carry adequate protection. The tank as it appeared in 1916 was born out of the static trench warfare of the Western Front where the unprotected infantry fell in their thousands before the multitude of machine guns. Although the tank was employed on many occasions over impossible terrain and in small numbers, thus diminishing its effectiveness, far sighted soldiers saw its potential as a war winning weapon. Ideas for its effective use were nurtured in England after World War I but were perfected by the Germans to form the basis of Blitzkrieg (lightning war). Tanks were committed to attack on a narrow front in great numbers supported by mechanised infantry, artillery and airpower as part of a closely integrated team. Having penetrated the enemy lines, they ranged far and wide enveloping their immobile opponents in a ring of steel. Considerable advances were made during World War II in firepower, armour protection and mobility and the powerful tanks that emerged at the end of the conflict had become the decisive element of land warfare. The postwar years were marked by the development of the Main Battle Tank, epitomised by the Centurion, capable of both independent armoured operations and of the support of the infantry. The value of the tank was reaffirmed by the Korean War and most vividly demonstrated in the Six Day War of 1967 and the Yom Kippur War of 1973. Despite many protestations that the tank is obsolete owing to the advent of guided missiles and hand held infantry anti-tank weapons it is often overlooked that tanks have never been immune to other weapons. All such weapons, however, are essentially defensive in nature and by themselves incapable of forcing a decision on the battlefield. It has also been proved many times that the most efficient tank destroyer is another tank. The future of the tank is assured for many years to come as no other weapon system is capable of crossing fireswept, broken ground and of engaging the enemy with direct fire. The generation of tanks currently entering service represent the optimum as regards both firepower and size. A tank weighing more than 50-60 tons would curtail mobility to an unacceptable degree as few bridges, railway systems or transporters can adequately bear such a vehicle. The greatest threat to the tank now lies in its escalating cost. The present trend to ever more sophisticated technology is liable to make future tanks so prohibitively expensive and consequently with limited defence budgets so few in number that, like the battleship, the tank will lose its strategic value.



Tank Mark I

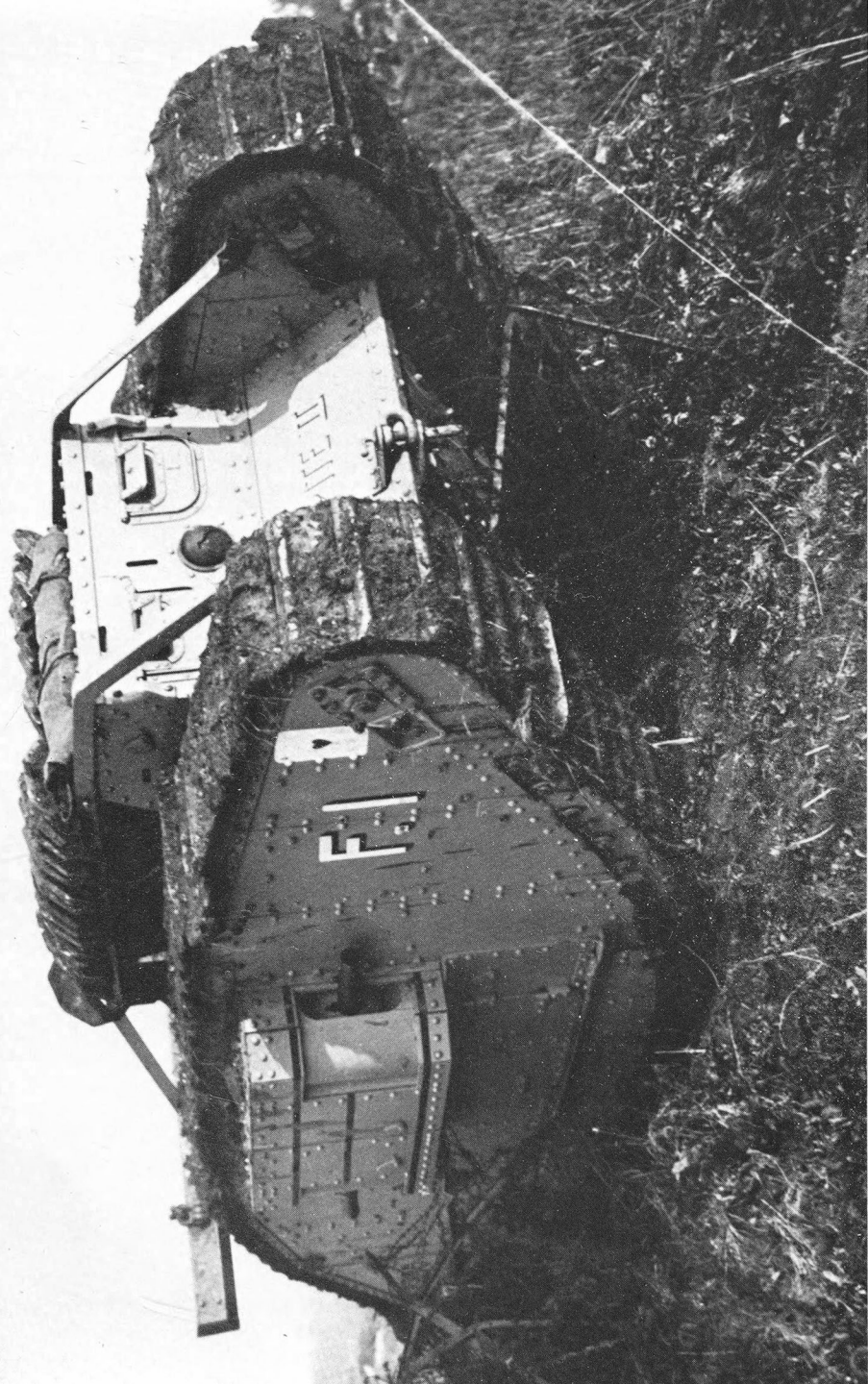
UK 1916

After the successful trials of the prototype Landship 'Mother' in February 1916, an order for 100 machines was placed with William Foster of Lincoln and the Metropolitan Carriage and Wagon Company of Birmingham. Subsequently the order was increased to 150 and the machines were designated 'Tank Mark I'; the name 'Tank' being adopted to disguise the true nature of the vehicle. The rhomboidal 'lozenge' shape was chosen for optimum trench crossing ability. Half the tanks were armed with 6-pounder naval guns in side-mounted sponsons and became known as 'Males'; the others armed with machine guns being 'Females'. Weighing 28 tons the Mark I was powered by a 105hp Daimler petrol engine at a speed of 3.7mph and steered by means of tail wheels. These however were soon discarded as they proved ineffective over broken ground and vulnerable to shell fire and steering was effected solely by clutch and brake — an operation that required four men. The tanks were first committed to action on 15 September 1916 to bolster the flagging Somme offensive. Forty-nine Mark Is took part in the Battle of Flers-Courcellette but, because of the unfavourable terrain and mechanical breakdowns, few of them reached their objectives. Those that did, however, swept all before them.

Left: A Tank Mark II Male bogged in desolate terrain that typified the Western Front. / RAC Tank Museum

Below: Tank Mark I Male . His Majesty's Landship (HMLS) Clanleslie moving up Chimpanzee Valley on 15 September 1916, the day the tanks first went into action at the battle of Flers-Courcellette. / IWM





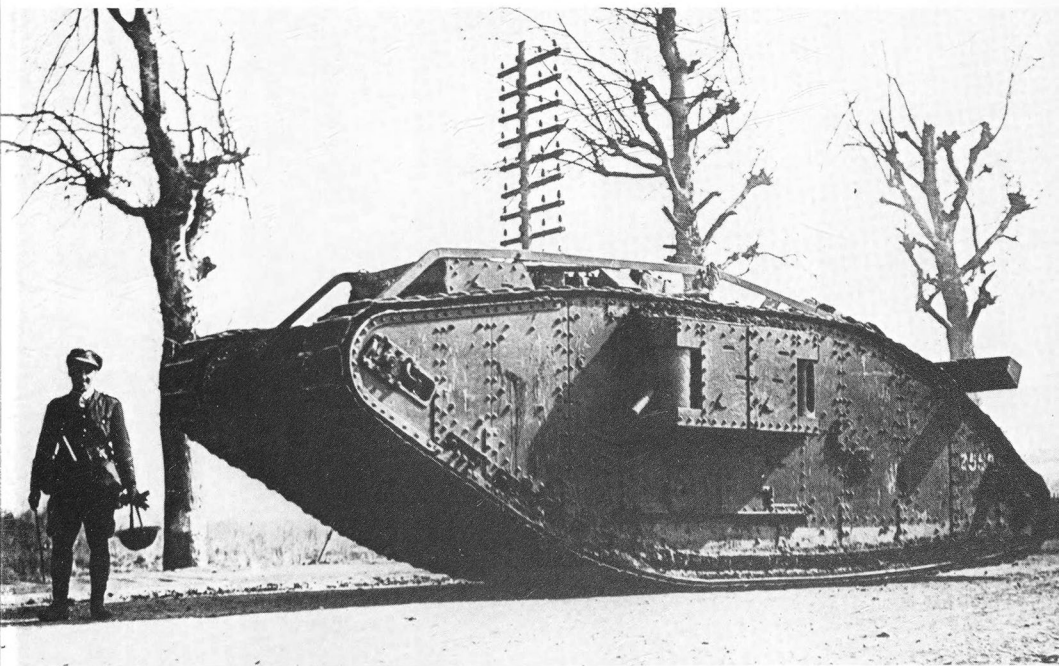
Tank Mark IV

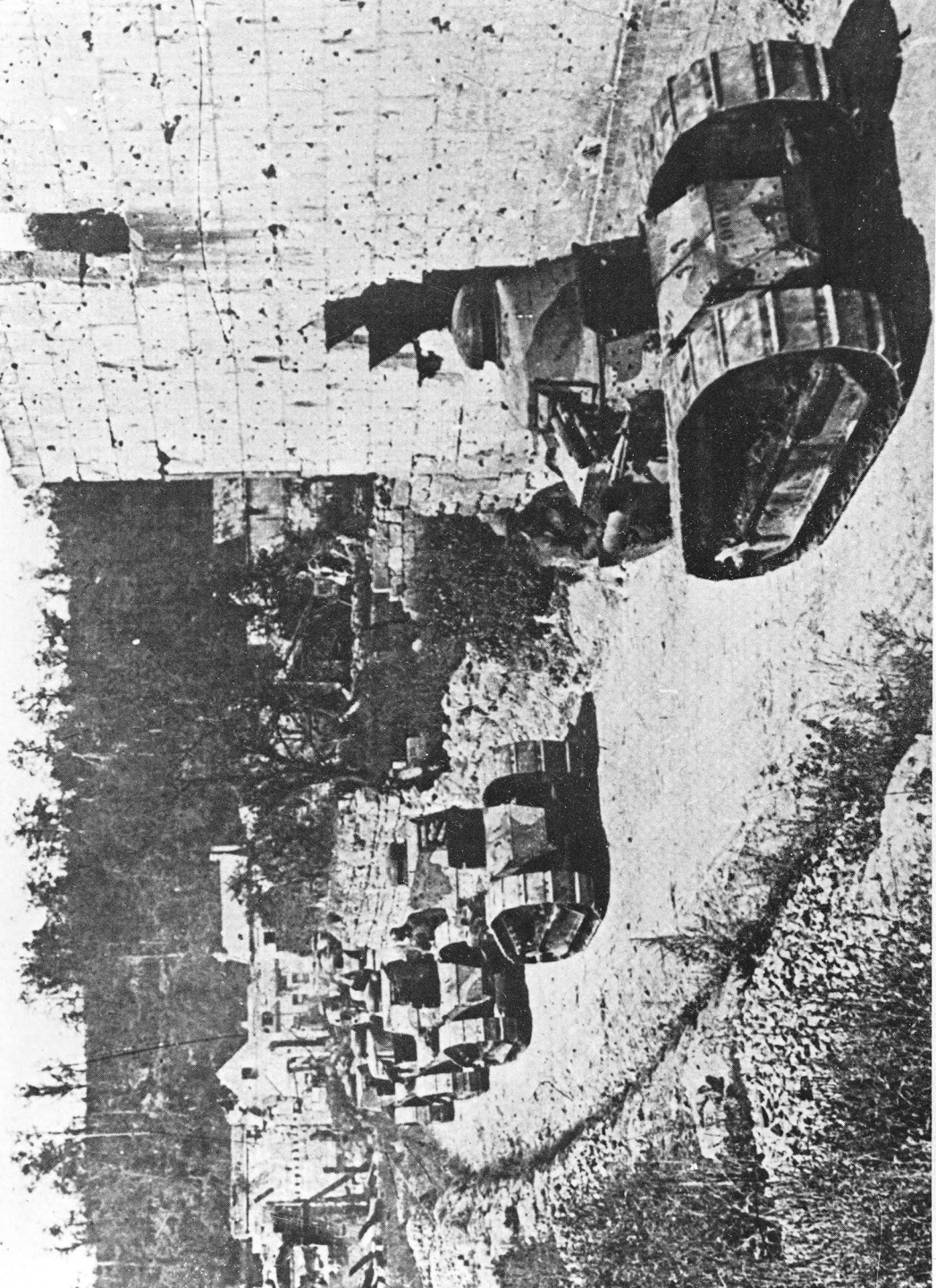
UK 1917

The Mark IV embodied many improvements suggested by battle experience and was the most numerous British tank of World War I. Though similar in appearance to the earlier marks, it had smaller sponsons that swung inboard for transport by rail — the only way to move tanks any distance. Previously the sponsons had to be laboriously unbolted and carried separately. The armour thickness was increased to $\frac{1}{2}$ in (12mm) and was proof against German anti-tank rifles firing armour piercing 'K' bullets. The crew conditions inside these early tanks were absolutely appalling. With the temperatures in the 90s, they suffered terribly from the heat and poisonous carbon monoxide fumes given off by the exposed engine. The noise was so great that speech was impossible and all communication was by hand signals. In battle, the smoke and stench of cordite, together with the effects of poison gas often made the crews violently sick. The Mark IV was first used in action at Messines but it was at the Battle of Cambrai on 20 November 1917 that the tanks really proved their worth when 450 predominantly Mark IVs, attacked en masse over suitable ground and in one day penetrated the German lines to a depth of five miles — more than the Passchendaele offensive had achieved in four months. A total of 1,015 Mark IVs were built, 420 Males and 595 Females.

Left: A Tank Mark IV Female crushing barbed wire entanglements during training prior to the Battle of Cambrai, November 1917. / IWM

Below: Tank Mark IV Female, armed with six .303in Lewis machine guns. / RAC Tank Museum





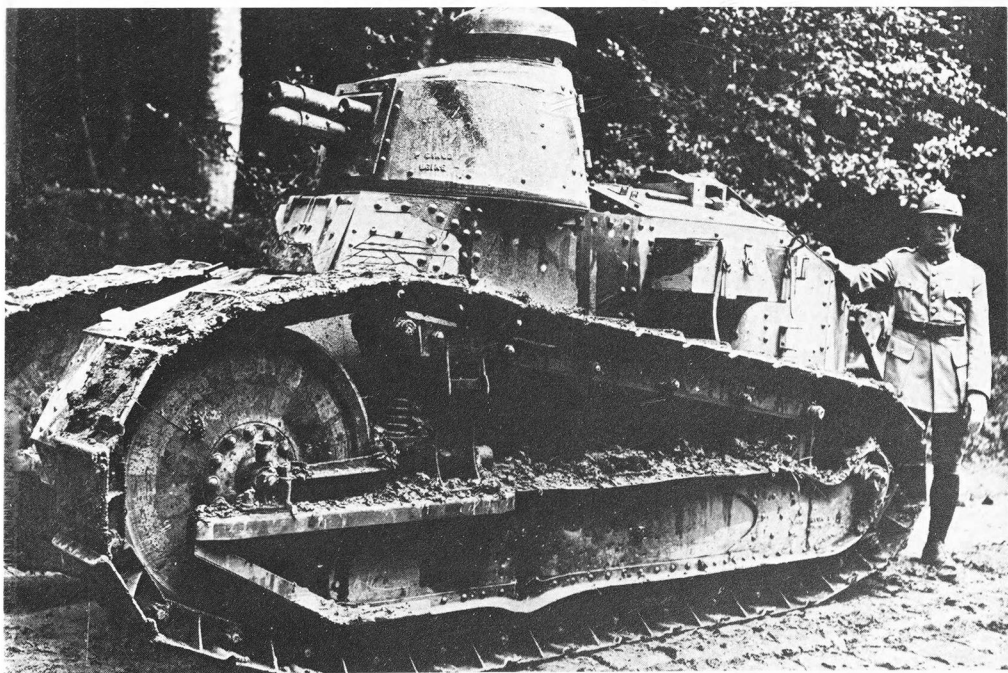
Renault FT17

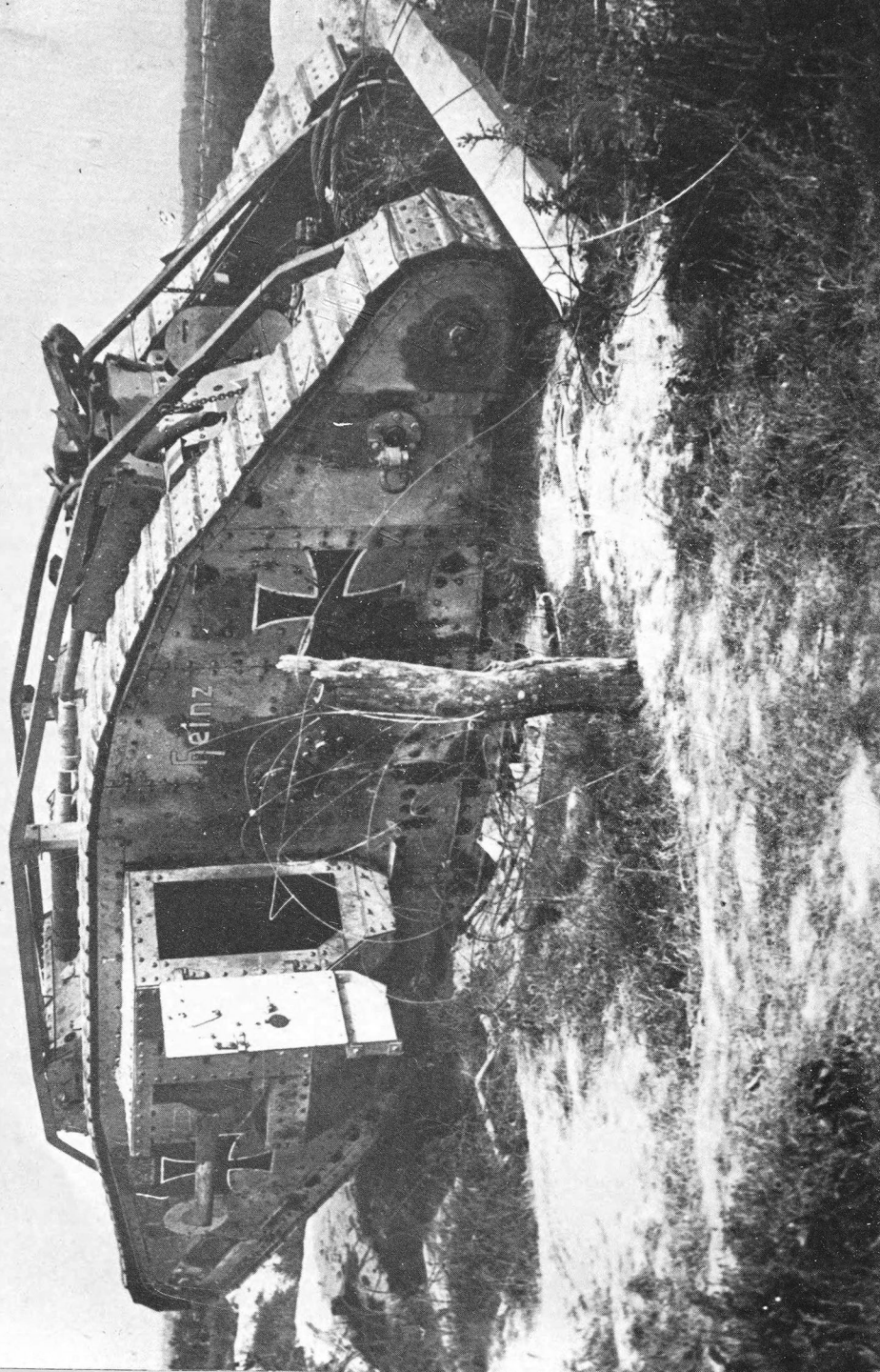
France 1918

The French developed three types of tank during World War I the most successful of which was the Renault FT17 Light Tank. It was conceived by General Eugene Estienne, the founder of the French tank force and the prototype was running in December 1916. The FT17 was the first tank with a fully rotating turret which mounted either a Hotchkiss 8mm machine gun or a Puteaux 37mm cannon. There were many production problems, the most difficult being the fabrication of the rounded turrets, and to overcome this problem Renault introduced an octagonal turret of riveted flat plates which simplified and speeded manufacture. The FT17 first saw action on 31 May 1918 during the battle for the forest of Retz and played a prominent part in defeating the German Offensive of 1918. The FT17 was also extensively used by the American Expeditionary Force. 3,177 Renault FT17s were built and many were exported to foreign armies after the war and formed the basis for a number of copies such as the Soviet KS, the Italian Fiat 3000 and the American Six ton tank. The tank also fought during the War of Intervention against the Bolsheviks in 1919 and during the Spanish Civil War, as well as with the French Army in colonial campaigns. The French Army was still equipped with 1,560 FT17s at the time of the German invasion of France in 1940.

Left: Renault FT17. / ECP Armees

Below: Renault FT17 armed with the 37mm Puteaux cannon. / ECP Armees





A7V

Germany 1918

Soon after the appearance of the first British tanks in 1916, the Germans set up a committee to develop a tank for the German Army. Taking as a basis a lengthened Holt tractor, as the British had done for 'Little Willie' (see frontispiece) and the French for the 'Schneider', the Germans constructed a large box shaped vehicle which was known as the A7V Sturmpanzerwagen. Powered by two 100hp Daimler engines the A7V was capable of speeds of 8mph on firm ground, twice the speed of British tanks, though it suffered from limited cross-country performance. With a crew of 18 the tank was armed with a Russian Sokol 57mm gun and six MG08 machine guns. Although 100 were ordered only 20 vehicles were produced, so the Germans also used captured British tanks, mainly Mk IVs. These were rearmed with 57mm Sokol guns in place of the 6-pounders and called the Beute Panzerwagen IV. It was on 24 April 1918 at Villers-Bretonneux that tank first met tank in combat when an A7V named *Elfriede* encountered No 1 Section of the 1st Battalion Tank Corps, comprising two Female and one Male Mk IV tanks. The A7V engaged the Female tanks forcing them to withdraw but was in turn hit four times by the 6-pounder of the Male. Whilst trying to evade the gunfire the A7V ran up an incline, overturned and was abandoned.

Left: A Beute Panzerwagen IV, named *Heinz*, displaying prominent Maltese crosses to avoid confusion with British tanks.

Below: The A7V, so named after the initials of the design committee, was first used in action at St Quentin on 21 March 1918.





Vickers Light Tank

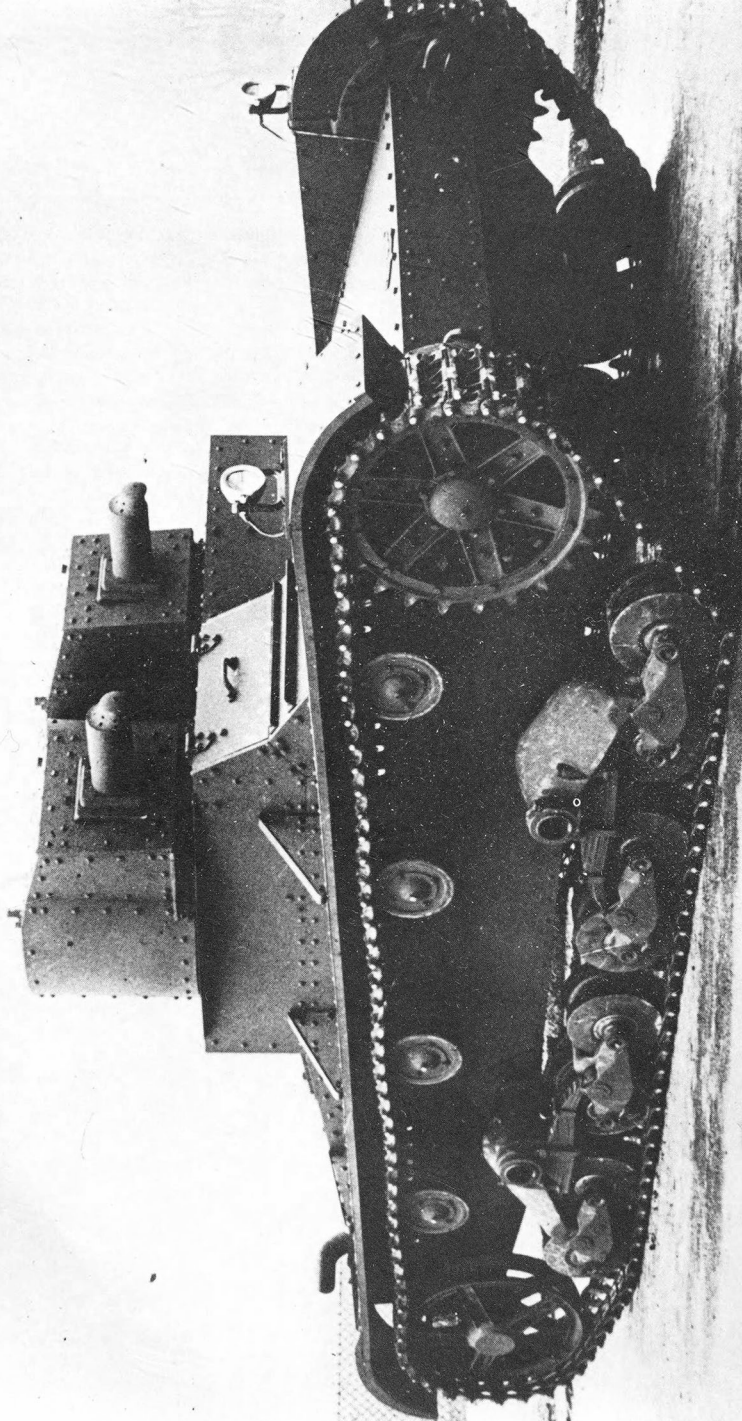
UK 1926

Due to the financial stringencies following World War I, British tank development was drastically cut. In the early 1920s, a number of small two-man tankettes were built by the firm of Carden and Loyd which were ideally suited to the prevailing War Office requirements for cheap Armoured Fighting Vehicles (AFV) for the mechanisation of the Army and for police duties in the British Empire. In 1928, the firm was acquired by Vickers-Armstrong Ltd, and there followed a line of successful and inexpensive light tanks that enjoyed considerable export sales. The design was sold to Bolivia, Canada, Chile, Holland and Japan and with only minor alterations it was developed to become in Italy the CV3/33, in Russia the T-27 and in Poland the TK. The German Panzerkampfwagen I was also based on the Vickers design. The British Army employed the Vickers Light Tank in a reconnaissance role and it formed the greater proportion of Britain's armoured forces at the beginning of World War II. In battle it proved of little value because, being armed solely with machine guns, it was ineffective against opposing AFVs and because of its light armour was easily knocked out. The design, however, lived on as the basis of the successful Universal Carrier for the infantry.

Left: Vickers Light Tanks, Mark VIs, in the Western Desert

Below: A line of Vickers Light Tanks, Mark VIs, on exercise during the summer of 1940.





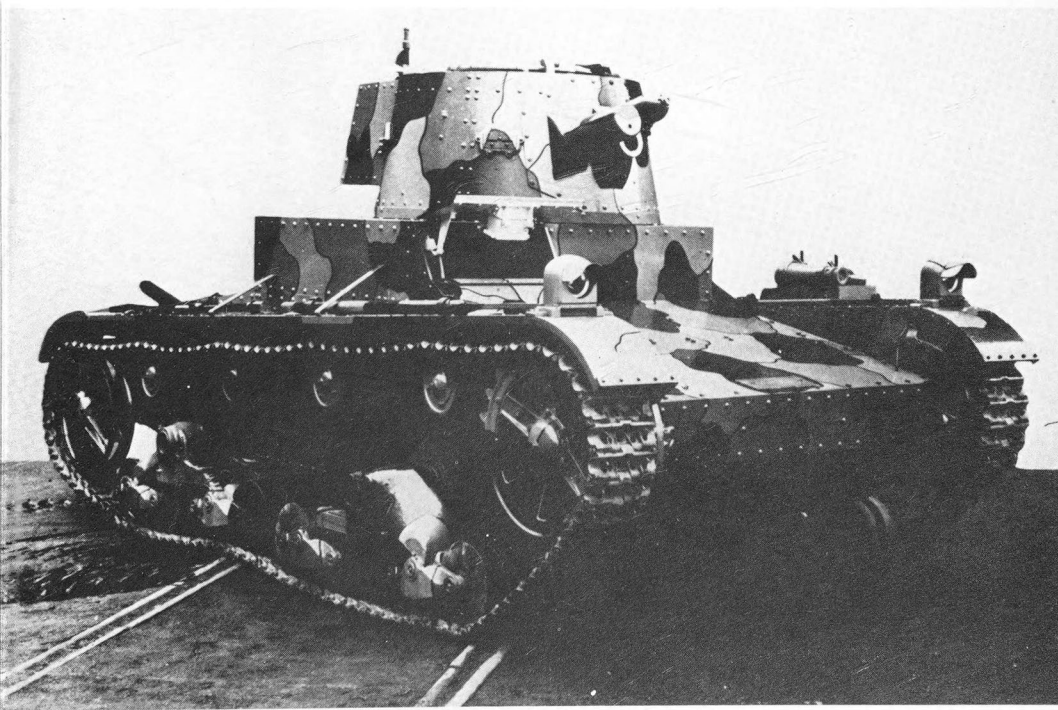
Vickers Six Ton Tank

UK 1928

The Vickers-Armstrong Six Tonner was a highly successful private venture and one of the most influential designs of the 1930s. It was built in two basic models, the Type A with two machine gun turrets mounted side by side and the Type B with a single two man turret mounting a 47mm gun. Although a great advance over the machine gun armed tankettes, the Six Tonner was not adopted by the British Army and it was overseas that this simple and effective tank achieved success. It was purchased by a dozen nations from Bolivia to Siam. The Six Tonner first saw action with the Bolivians in the Gran Chaco war against Paraguay in 1933. 12,000 of both types were built in the Soviet Union as the T-26A and T-26B. Apart from the armament they were identical to the original Vickers design and fought in the Winter War against the Finns who were also equipped with the Six Tonner. The T-26 was supplied to the Republicans during the Spanish Civil War and also remained in service with the Soviet Army well into World War II. As the 7TP, the Six Tonner was the principal battle tank of the Polish Army in September 1939 and proved superior to the German Pzkwfws I and IIs.

Left: Vickers Six Ton Tank Type A (Mark E). / *Vickers Ltd*

Below: Vickers Six Ton Tank Type B (Mark F) as supplied to China during 1935-6. / *Vickers Ltd*





BT Series

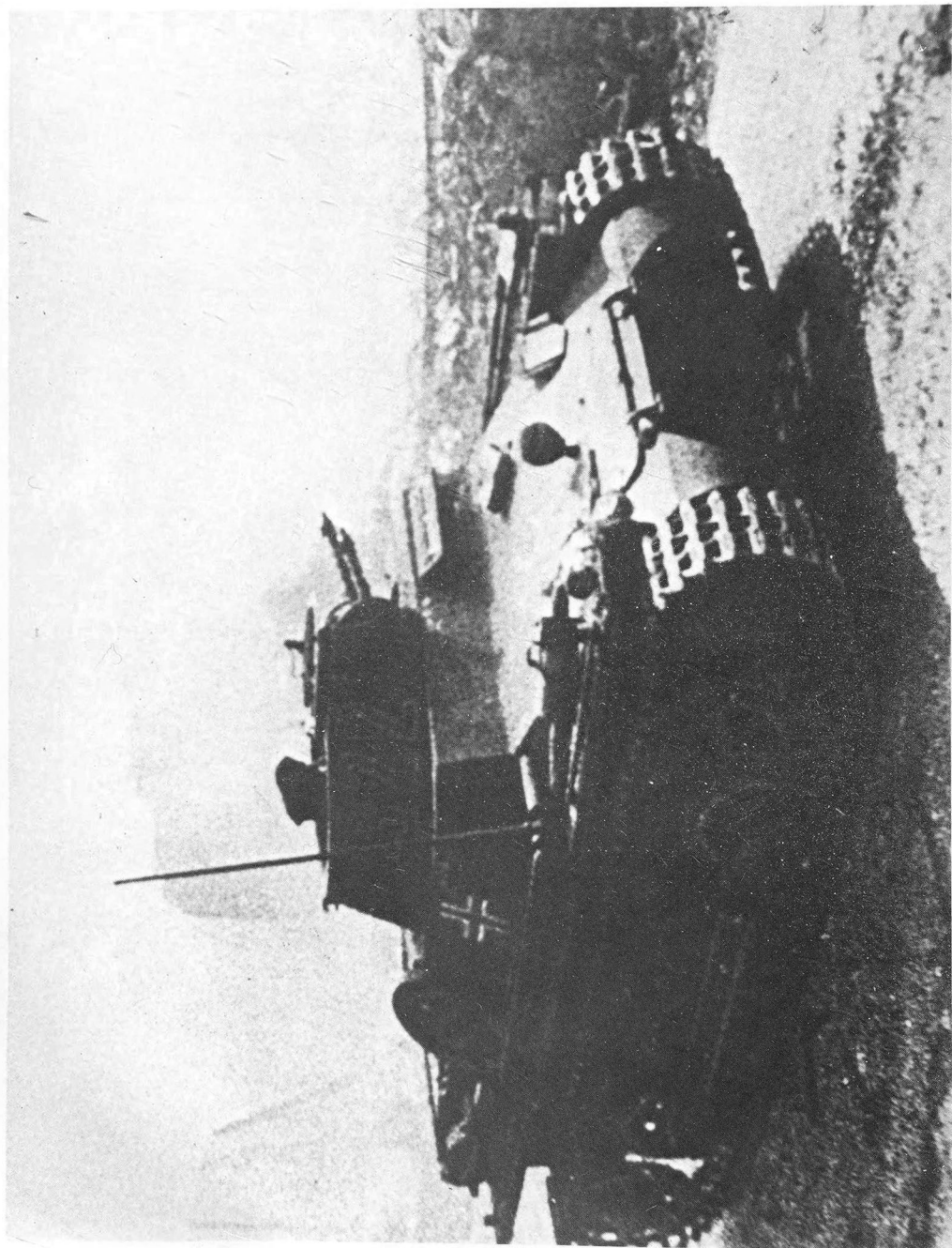
USSR 1931

One of the most innovative of tank designers was the American J. W. Christie, who developed a tank suspension system capable of running at high speeds both on tracks and wheels. His design was purchased by the Soviet Union and Great Britain and formed the basis for the medium tanks of both countries during the 1930s. It is interesting to note that the culmination of each country's development, the T-34 and the Crusader, both saw action for the first time in July 1941. The first of the BT series to be produced in quantity was the BT-2, armed with a 37mm gun and differing in only minor details from Christie's original design the M-1931. The BT-2 was followed by the BT-5 with a more powerful 45mm gun in a larger turret. The final major production model was the BT-7 which featured the technical innovation of sloped and welded armour. Being by Soviet classification neither a Light nor Medium Tank, it was designated Bystrokhodny Tank (Fast Tank) and was intended for long range penetration of enemy defences. It was known unofficially to Soviet tank crews as the Betka (Beetle). The BT was the predominant Soviet tank of the 1930s and saw action in Manchuria against the Japanese in 1939, Poland in 1939, the Winter War with Finland of 1939-40 and during the German invasion of 1941.

Left: The brainchild of the eccentric American genius J. W. Christie — the M1931 which in US Army service was designated the T3 Medium Tank.
/ US Army Signal Corps

Below: A line of BT-7-2s moving along Gorky Street, Moscow, on their way to the front line during the defence of the city, November 1941. */ Novosti*





Panzerkampfwagen I and II

Germany 1934

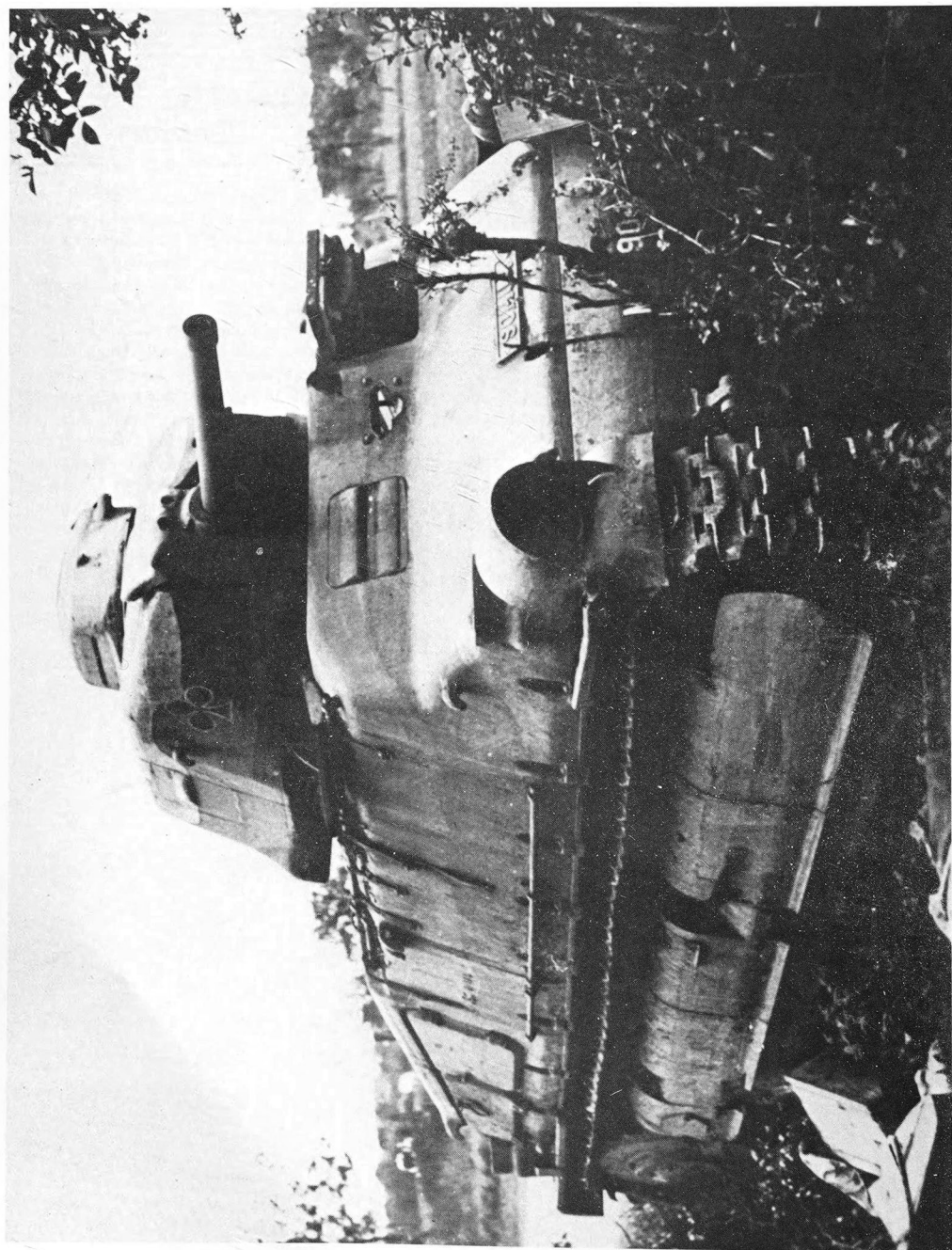
After World War I, Germany was forbidden by the Versailles treaty to possess or produce tanks. However, during the 1920s a variety of weapons including AFVs were developed in secret and, with the connivance of the Soviet Union were tested at Kazan in Russia. After the rise of Hitler rearmament was accelerated and plans were laid for the development of purpose built battle tanks which eventually emerged as the Panzers III and IV. As an interim measure a vehicle was required for the training of the nascent armoured forces and in 1933 prototypes of a simple, cheap and easy to manufacture tank were invited from a number of firms. A design by Krupp based on the Carden-Loyd tankette was selected and production began in 1934 under the code-name *Landwirtschaftlicher Schlepper* or 'agricultural tractor'. Later designated Panzerkampfwagen I it was 13ft long and weighed 5.4 tons, with a crew of two. Armament was two 7.92mm machine guns and 3,125 rounds of ammunition were carried. In 1935 a further stop-gap machine, the Pzkw II, was produced, weighing 10 tons and armed with a 20mm KwK 30 gun with a co-axial 7.92mm machine gun. Blooded in the Spanish Civil War these erstwhile training machines were numerically the most important tanks during the early campaigns of World War II and their contribution to the success of Blitzkrieg warfare was considerable.

Left: Pzkw I Ausf B during the attack on the Low Countries, May 1940.

/ Chamberlain Collection

Below: Pzkw II Ausf B during the battle of France, May 1940. / ECP Armees





SOMUA S-35

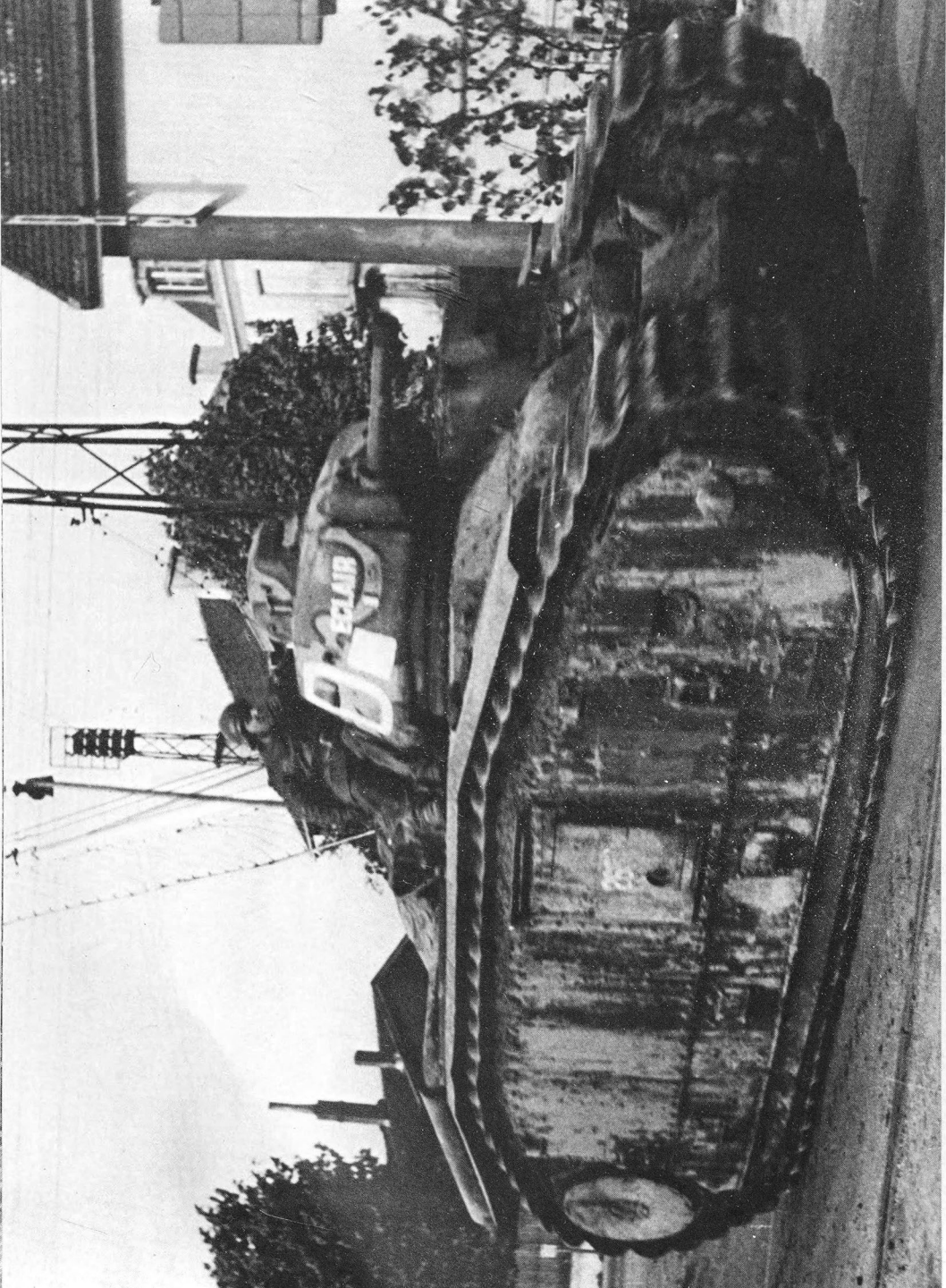
France 1936

At the date of its introduction in 1935, the SOMUA S-35 was one of the finest tanks in the world. Incorporating such advance features as a double differential steering system and the extensive use of castings for turret, hull and superstructure, it was a fast, reliable and well-armoured tank. However it suffered one grave disadvantage in that it mounted a one man turret so that the commander had to load, aim and fire the main armament as well as command the tank. The 47mm SA-35 gun was superior to any other tank gun then carried and the thickness of armour afforded good protection. Produced by the Société d'Outillage Mécanique et d'Usinage d'Artillerie, hence the name SOMUA, approximately 500 S-35s were built. Powered by a SOMUA V8 engine of 190hp the tank had a speed of 25mph. The hull was made from three castings bolted together to form a rigid body but presented a vulnerable defect in that, if the tank was struck by a solid shot round near the join, it could cause the hull to burst asunder. S-35s were employed in 1940 by the DLMs (Division Légères Mécaniques) and one group fought with General de Gaulle's 4th DCR (Division Cuirassée de Réserve). The S-35 was an excellent tank but never realised its full effectiveness because of the misguided employment of French armour during the battle for France.

Left: SOMUA S-35. Note the line of bolts that fixed the hull and superstructure together and formed a vulnerable part of the design. / IWM

Below: SOMUA S-35. / ECP Armees





Char B1-bis

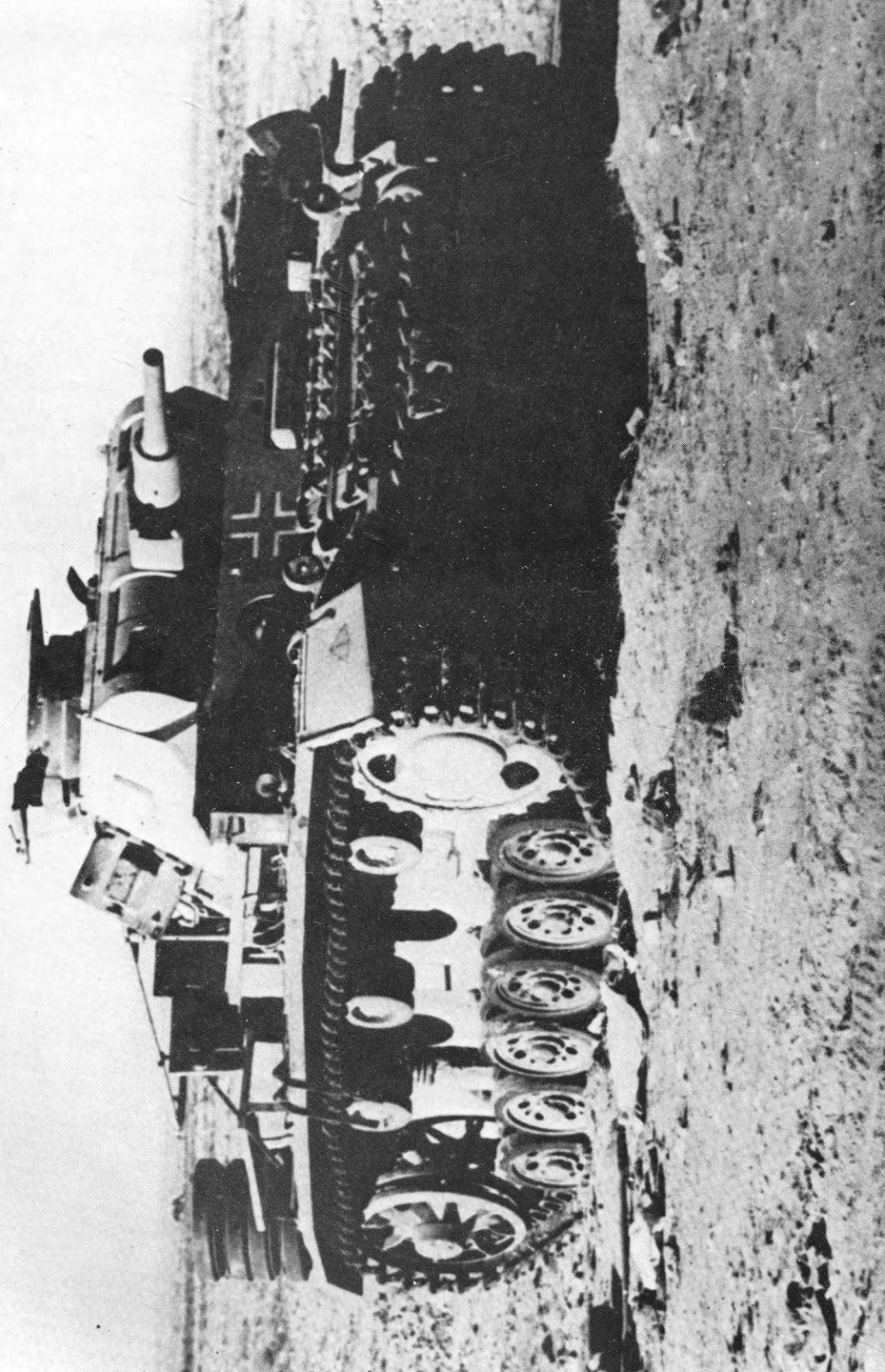
France 1936

The Char B was originally conceived in 1921 as an infantry support tank and was a logical development of the tanks of World War I with its high profile and tracks running around the hull. As with all French tank designs it embodied many advanced and interesting features including self-sealing fuel tanks, electric power traverse of the turret, compressed air bore evacuation of the main armament and a gyroscopic direction indicator. The major production type was the Char B1-bis built from 1937 onwards by Renault, Saint-Chamond, Schneider, FCM and AMX. It was armed with the Model SA35 47mm gun in the APX 4 turret (identical to that of the SOMUA S-35 with the same problems for the commander) and a 75mm gun low down in the hull front. This gun was aimed by manoeuvring the complete vehicle and was fired by the driver. The Char B1-bis had excellent armour up to 60mm thick which was proof against all German tank guns at normal ranges. In all 365 were built, including 35 of the earlier B1, and they equipped the four French Armoured Divisions (Divisions Cuirassées de Réserve — DCR). Weighing 32 tons and powered by a 307hp six-cylinder Renault petrol engine, the Char B1-bis was more than a match for the German tanks in 1940.

Left: Char B1-bis in French army service, 1940. / ECP Armées

Below: Char B1-bis recaptured from the Germans by the Free French, 1944. / SCA





Panzerkampfwagen III Germany 1937

The Pzkw III was the first of Germany's purpose built tanks and was intended as the mainstay of the Panzer Divisions being formed in the late 1930s. The first four marks, the Ausf A-D, were experimental models with differing types of suspension. In 1937 a torsion bar suspension was adopted, making the Pzkw III the first tank to use such a system, and from this time the basic design was set. The first model produced in quantity was the Ausf E which was introduced in 1938 but only 98 Pzkw IIIs were available for the invasion of Poland. Subsequent models, Ausf-N, differed only in details of armament and armour and changes to speed production. The battle for France highlighted the inadequacy of the tank's 37mm KwK gun which was unable to penetrate the armour of the heavier French and British tanks and it was replaced by a 50mm KwK L/42 gun in a revised mantlet. The Panzer III was the principal German tank in the Blitzkrieg campaigns against Yugoslavia, Greece and the Soviet Union. During 1943 it was withdrawn from frontline service but the reliable chassis was subsequently used for the Sturmgeschütz III Assault gun. A total of 6,157 Pzkw IIIs were built plus a further 9,409 Stug-IIIs.

Left: Panzerbefehlswagen III Ausf H of 15th Panzer Division, North Africa 1942. This was the command tank version of the Pzkw III. / RAC Tank Museum

Below: Pzkw III Ausf E, France 1940. / Chamberlain Collection





Type 97 Medium Tank Chi-Ha

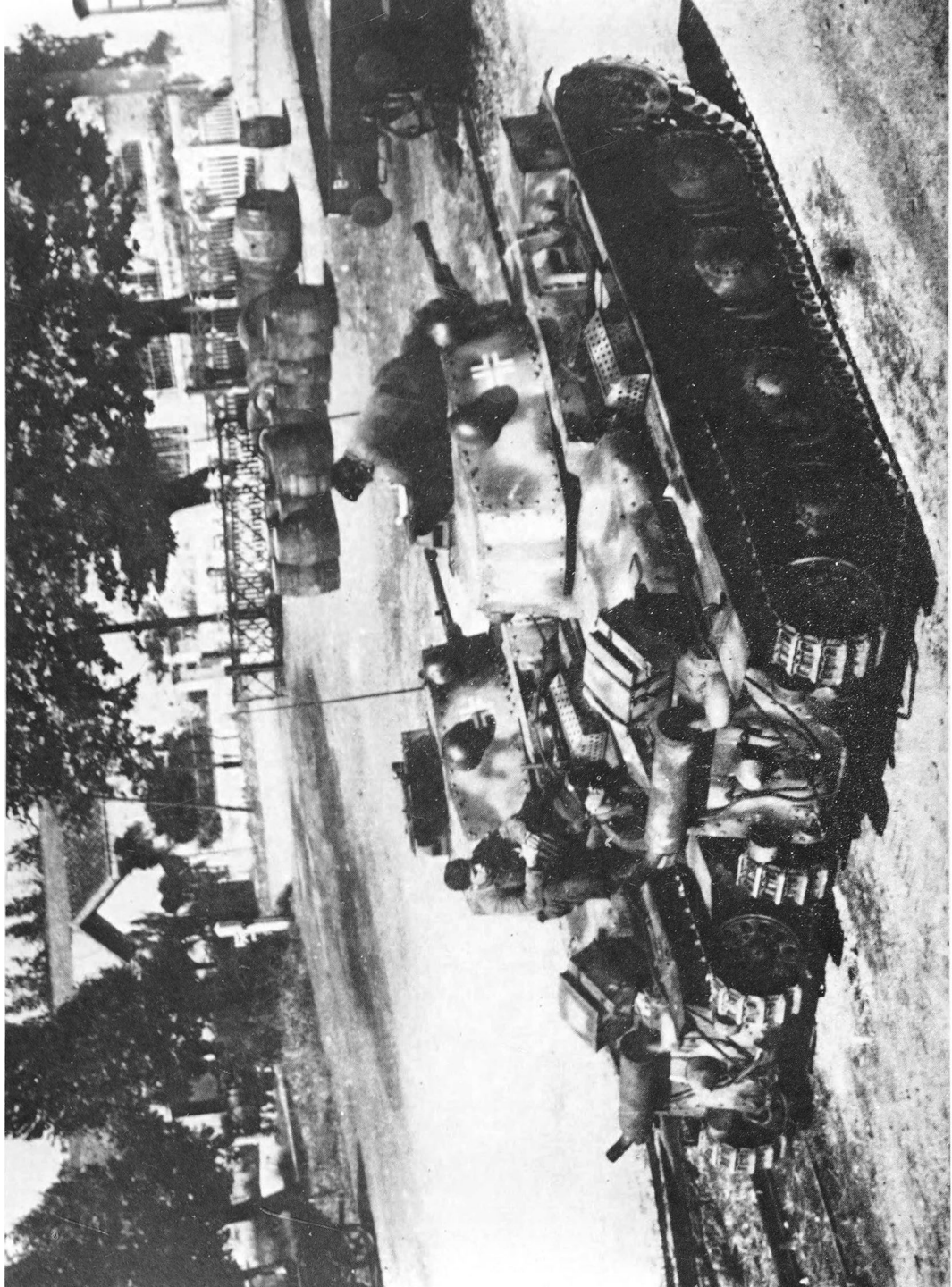
Japan 1937

The principal medium tank of the Japanese Army during World War II was the Type 97 Chi-Ha. At the time of its introduction in 1937 it was an excellent design, being the first tank to be powered by an air-cooled diesel engine. This engine was developed for its advantages of operating in winter conditions and areas with limited water supplies, together with its reduced fire risk and low fuel consumption. Built by Mitsubishi Heavy Industries, the Chi-Ha was armed with a low velocity Type 90 57mm gun for infantry support and two 7.7mm machine guns, one in the hull front and one in the rear of the turret (a characteristic feature of Japanese tanks). During the Nomonhan incident of 1939 in Manchuria the 57mm proved ineffective against Soviet tanks and a new long-barrelled Type 1 47mm gun with an improved anti-tank capability was installed in an enlarged turret. This model was designated the Type 97 Shinhoto Chi-Ha and entered service early in 1942. Against the ill-equipped Chinese Army the Chi-Ha was an effective fighting vehicle but proved no match for the Allied tanks in the Pacific, being totally outgunned and having vulnerable armour. After World War II a number of Chi-Has were used by the Communist forces during the Chinese Civil War.

Left: Type 97 Medium Shinhoto Chi-Ha.
/ RAC Tank Museum

Below: Type 97 Medium Chi-Ha.
/ RAC Tank Museum





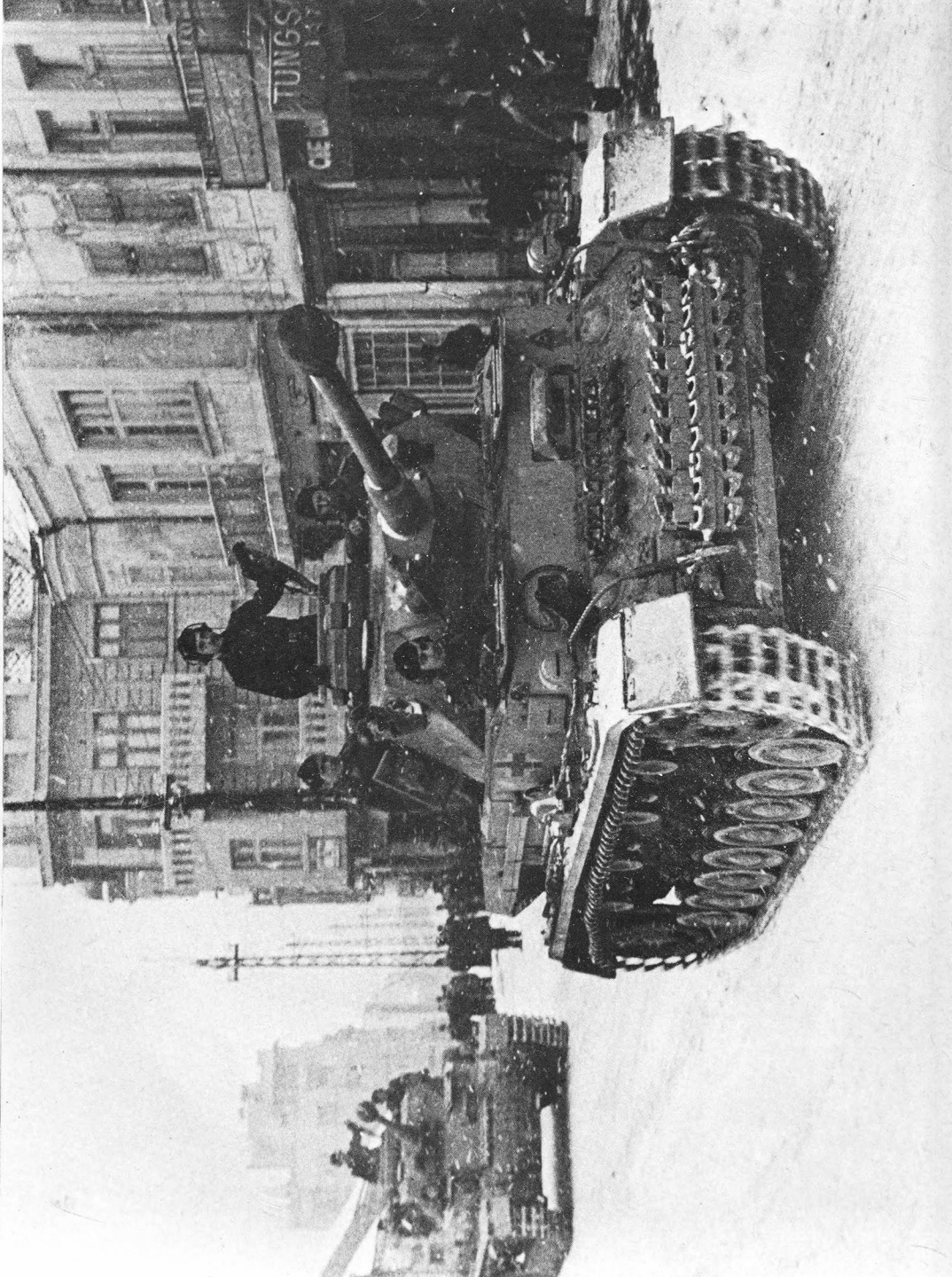
LT-38/Panzerkampfwagen 38(t) Czechoslovakia/Germany 1938

One of the most successful of prewar light tanks was the Czech LT-38 (TNHP), built by CKD of Prague. A compact and reliable vehicle, it was sold to Iran, Latvia, Peru and Switzerland and was also built under licence in Sweden. After the German annexation of Czechoslovakia in March 1939 all serviceable Czech tanks were absorbed into the German Army. Redesignated the Panzerkampfwagen 38(t), the Germans were well pleased with LT-38 as, armed with a 37.2mm (SKODA A7) gun of good armour piercing performance, it was clearly superior to the Panzer I and IIs which formed the bulk of German armour at that time. In the battle of France the 7th and 8th Panzer Divisions were composed almost entirely of ex-Czech tanks, indeed during 1940-41 they formed a quarter of all German tank strength. On the Russian front it was completely outclassed as a gun tank but production of the chassis continued as the basis of several improvised anti-tank self-propelled guns, such as the Marder III, and later as the efficient tank destroyer, Jagdpanzer Hetzer. The gun tank continued to serve late into the war with armoured train units; the tanks being carried on flat cars for dismounted action against partisans.

Left: Pztkpfw 38(t)s on the Russian Front, 1942. / IWM

Right: Pztkpfw 38(t) during the attack on the Low Countries, May 1940. / IWM





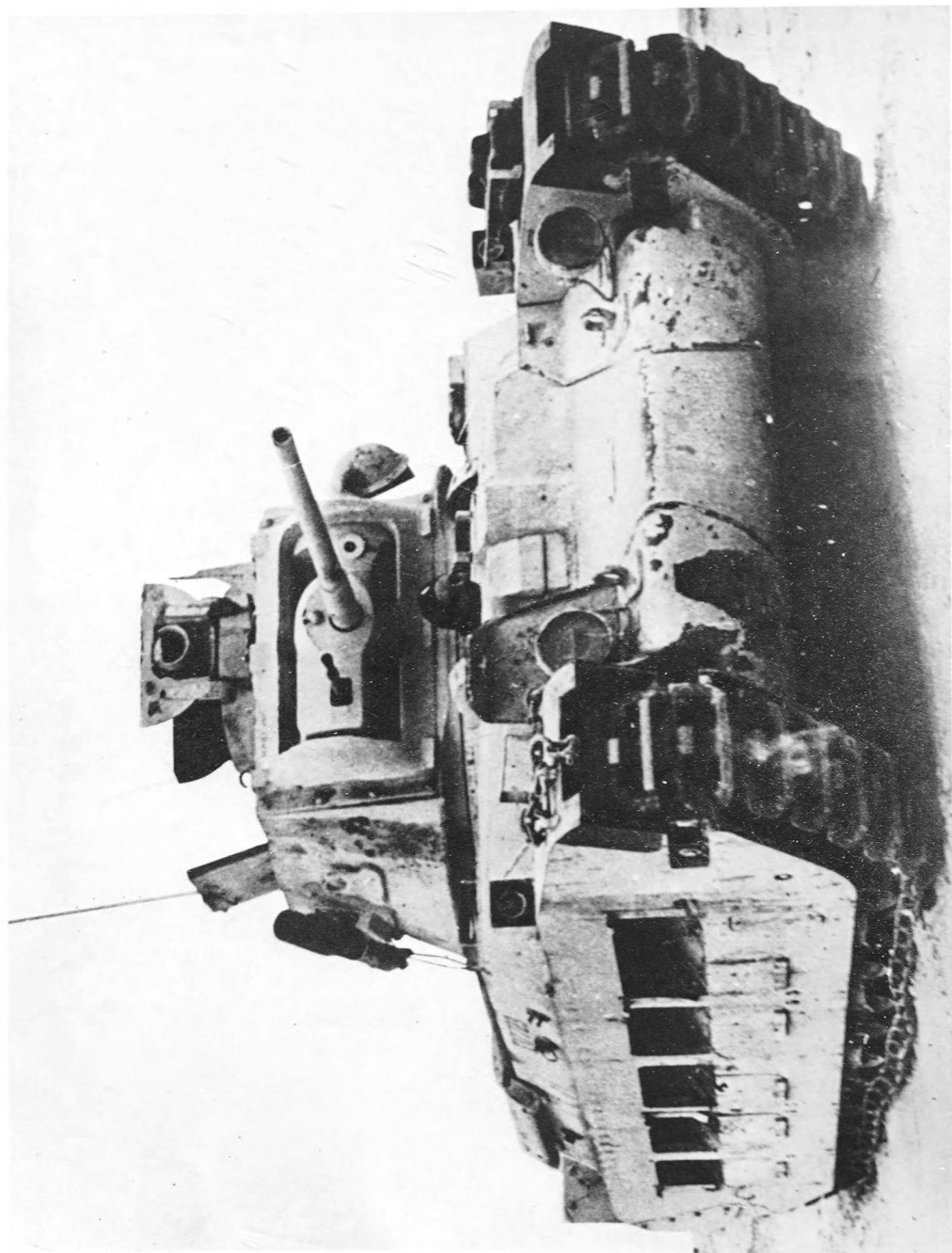
Panzerkampfwagen IV Germany 1938

Though more attention has been paid to the Tiger and Panther, the Pzkw IV was numerically and tactically the most important German tank of World War II. It was originally conceived as a support tank to the lighter Panzer IIIs and was armed with a 75mm KwK L/24 gun, firing a heavy high explosive shell. This weapon, though excellent against anti-tank guns and unarmoured targets, was virtually useless against the Soviet tanks encountered in 1941 during Operation Barbarossa. Consequently in 1942, the Pzkw IV was rearmed with the longer 75mm KwK 40 L/43 which gave the tank a real armour piercing ability, capable of defeating the dreaded T-34. This version, known as the Ausf F2, was also used with great effect in North Africa where it was known to the Allies as the Mark IV Special. Subsequent models were armed with the more powerful 75mm L/48 gun. By 1943 the Pzkw IV had become the standard battle tank of the panzer divisions and was to remain so until the end of the war by which time 8,544 had been produced. It was the only tank of any nation to be built throughout the war and because of its sound basic design it was possible to improve repeatedly both the armament and armour protection.

Left: Pzkw IV Ausf H, Russia, 1943.
/ ECP Armees

Below: Pzkw IV Ausf D in North Africa.
/ Chamberlain Collection





Matilda

UK 1939

The Matilda was designed for close support of the infantry and proved to be the best of the prewar British tanks. The prototype was running in 1938 but due to its complex design it was difficult to manufacture and only two were in service by the outbreak of war. During the battle of France, its thick armour was immune to German anti-tank guns and it was the Matilda that led the only Allied counter-attack against the German Blitzkrieg at Arras. This attack so unnerved the German High Command that they halted the panzers for two days thus allowing the Allies to form a defensive perimeter around Dunkirk and effect the evacuation of the British Expeditionary Force. It was in the early battles of the North African campaign that the Matilda won lasting fame when the tanks of the 7th Royal Tank Regiment overwhelmed the Italian defensive positions around Sidi Barrani, Bardia and Tobruk, earning the title of 'Queen of the Battlefield'. The Matilda saw further service in the Far East where they were employed by the Australians as flamethrowers and it has the distinction of being the only British tank to serve throughout the duration of the war.

Left: Infantry Tank Mark II, Matilda Mark II. / RAC Tank Museum

Below: Matildas of 7th Royal Tank Regiment, North Africa 1941. / IWM



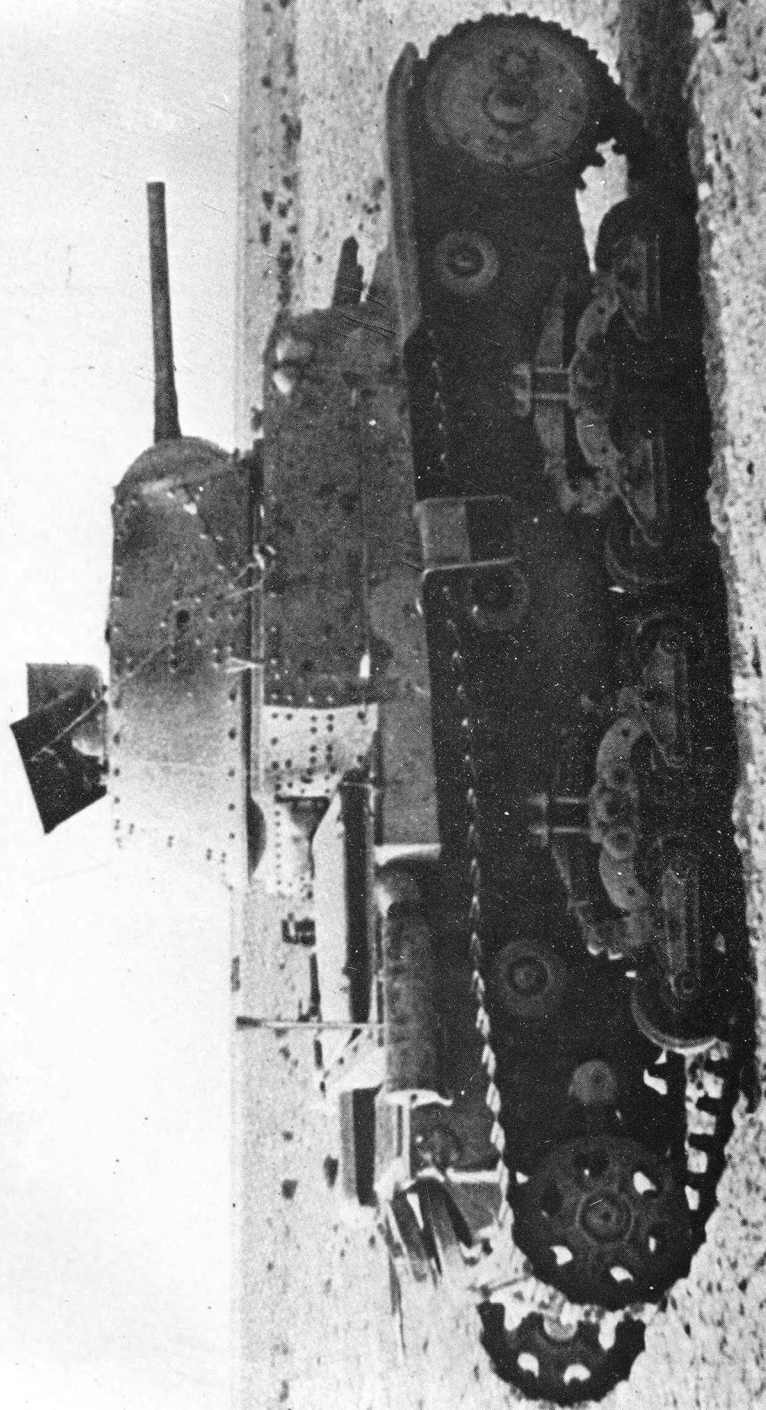


Soviet heavy tanks of the 1930s, such as the T-35 and SMK, mounted as many as five turrets and were massive and unwieldy. In 1938, work began on the development of a new heavy tank to replace these earlier models and because of the influence of Stalin, who took a great interest in tank matters, the design chosen was a single-turreted tank that was named the KV-1 (after Kliment Voroshilov, a Marshal of the Soviet Union). The prototype was running in September 1939 and the KV-1 was tested in combat during the Winter War against Finland. Production began in December at the Kirov tank plant in Leningrad and subsequently at the massive complex of tank factories behind the Ural mountains known as Tankograd. The KV-1 was a formidable tank mounting a powerful 76.2mm gun when comparable foreign designs were armed with only 37-45mm guns. Its armour was quite impervious to such weapons and its manoeuvrability was excellent for a tank weighing 46 tons due to its 500hp diesel engine, exceptionally broad tacks and torsion bar suspension (an unprecedented system for such a large vehicle at that time). Though committed in only small numbers during the German invasion of 1941, the KV-1 completely outclassed the Panzers III and IV. Production ceased in 1943 after 4,736 had been built.

Left: A KV-1B negotiating a German anti-tank ditch. The inscription on the turret reads 'Crush the Fascist Vipers'. / *Novosti*

Below: A column of KV-1Cs moving up to the frontline, 1942. / *Novosti*





M13/40

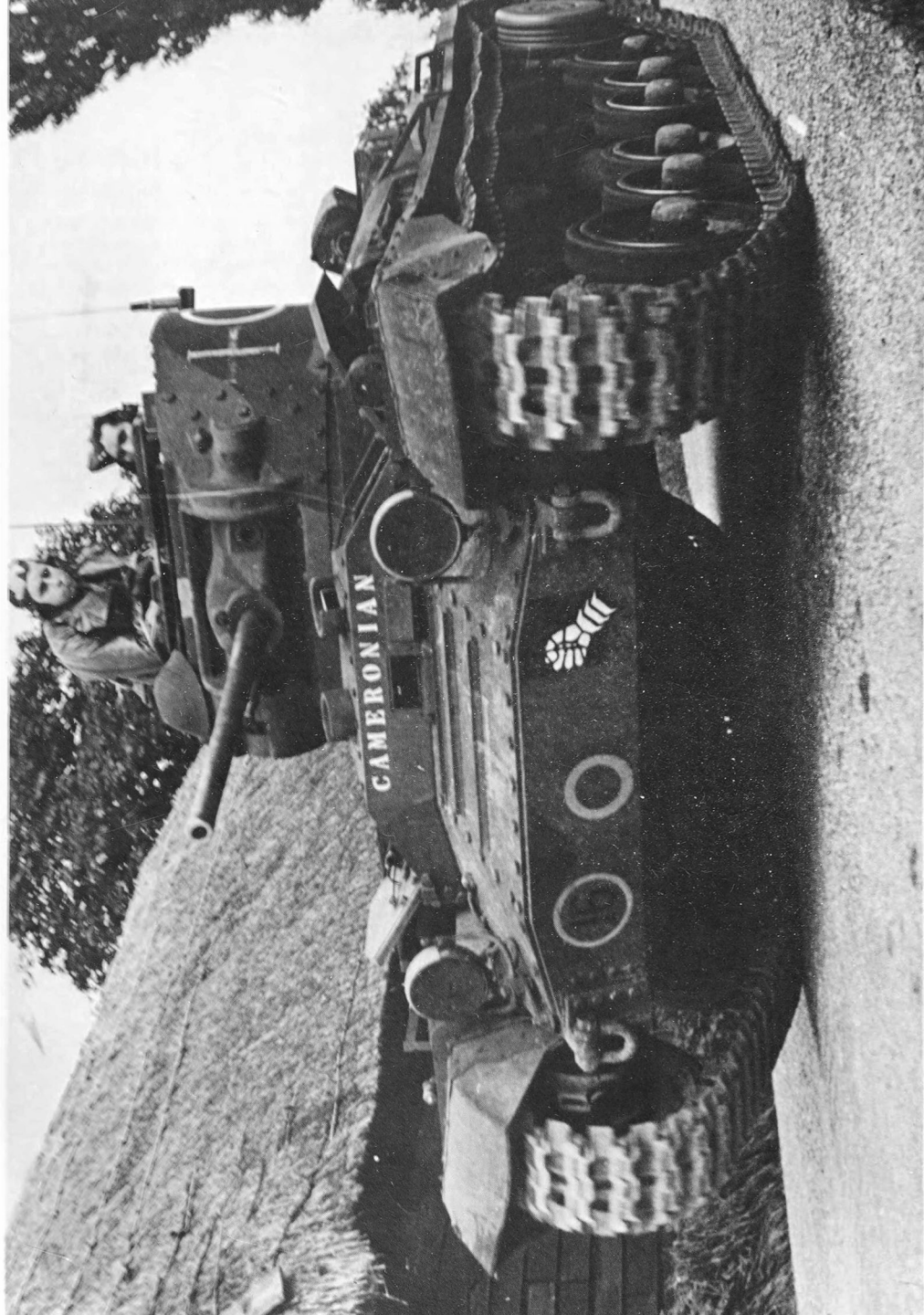
Italy 1940

Despite a tradition of brilliant automotive engineering, Italian tank designs during World War II were not outstanding. The most successful was the Carro Armato M13/40, a development of the earlier M11/39. The designation derived from the type of tank, Medium, its weight of 13 tons and the year it entered service with the Italian Army, 1940. The main armament was a turret mounted 47mm gun, with a co-axial 8mm Breda machine gun. In addition there was a twin 8mm machine gun mounting in the right hand hull front. The tank was powered by an efficient Fiat Spa 8-cylinder diesel engine of 125hp and had a top speed of 20mph. The armour protection was quite inadequate against the British 2-pounder, being only 42mm thick at its maximum and many M13/40s supplemented their thin armour with sandbags lashed to the glacis plate and hull front. A number of M13/40s were captured during Wavell's North African offensive of 1940/41 and pressed into service with the depleted tank regiments of the Commonwealth forces, notably with the 6th Royal Tank Regiment and the 1st Australian Cavalry Regiment who displayed conspicuous kangaroo markings on turret and hull to avoid confusion with enemy tanks.

Left: M13/40 in North Africa, 1941.
/ RAC Tank Museum

**Below: M13/M40 Medium tanks
captured at Beda Fomm in February
1941. / IWM**





Valentine

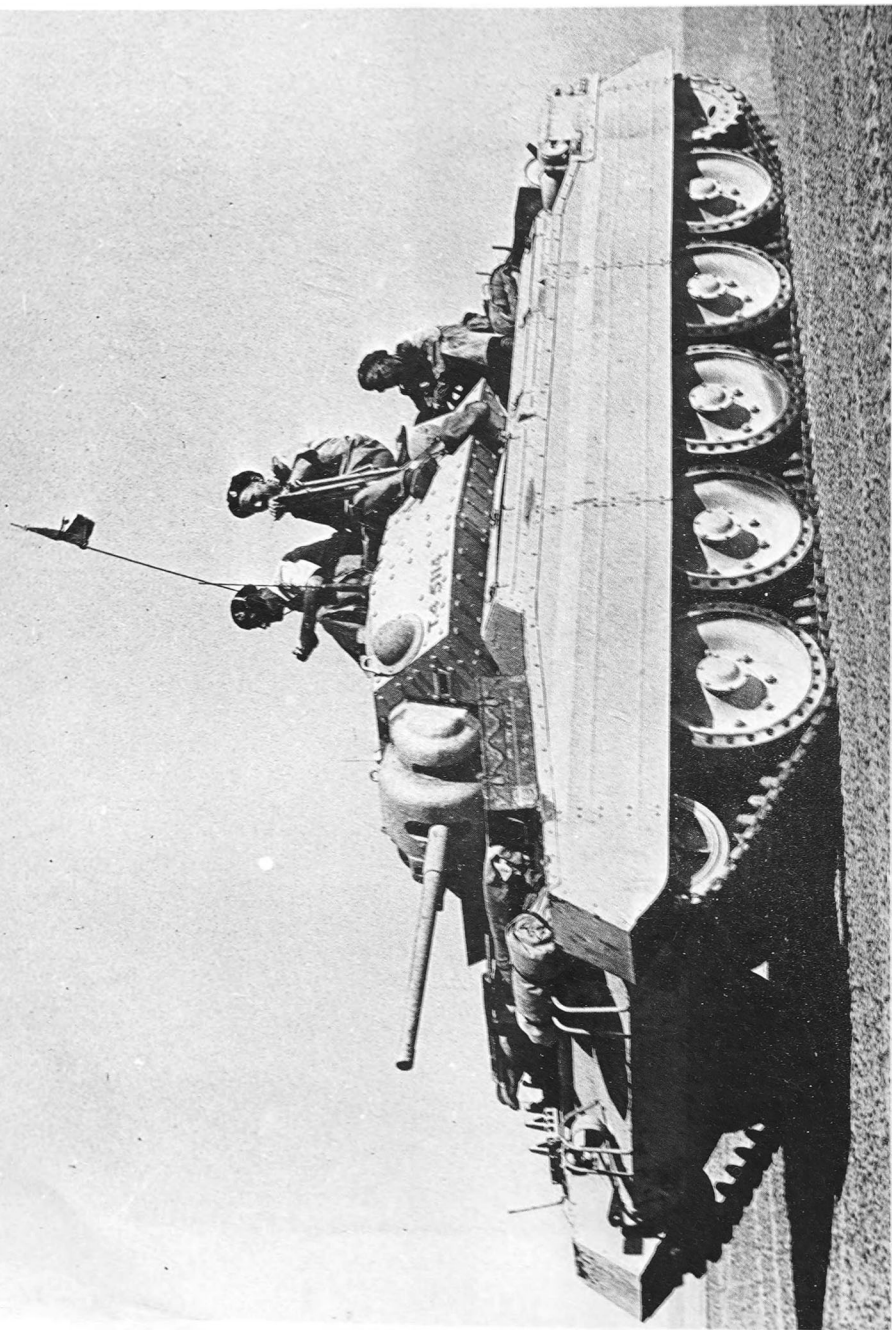
UK 1940

The Valentine was a private venture by Vickers Armstrong Ltd and gained its name because the design was submitted to the War Office on St Valentine's Day, 1938. Production of the design, based on proven components used in the A9 and A10 Cruiser tanks, began in May 1940. As an infantry tank, the Valentine had an armour basis of 65mm and was armed with a 2-pounder gun. It was employed extensively throughout the North African campaign from 1941 onwards and covered vast distances on its tracks in the pursuit of Rommel's Afrika Korps. The Valentine was a popular tank, being rugged and reliable, but its two-man turret and inadequate armament were a distinct shortcoming. Later marks were upgunned with the 6-pounder and 75mm but by this time the design was obsolescent and the chassis was subsequently used in other roles such as the 17-pounder self-propelled gun Archer. A noteworthy feature of the Valentine was that unlike most British tanks of the period it was powered by a diesel engine with the attendant advantages of enhanced fuel consumption and reduced fire risk. The Valentine was developed through 11 marks and was manufactured in greater numbers than any other British tank, 8,275 being produced up to 1944. 1,420 of these were built in Canada by the Canadian Pacific Railway, all but 30 being supplied to the Russians under Lease-Lend.

Left: Infantry Tank Mark III, Valentine Mark II of the 6th Armoured Division during a training exercise in England, 1941.

Below: New Zealand Valentines in the Western Desert.





Crusader

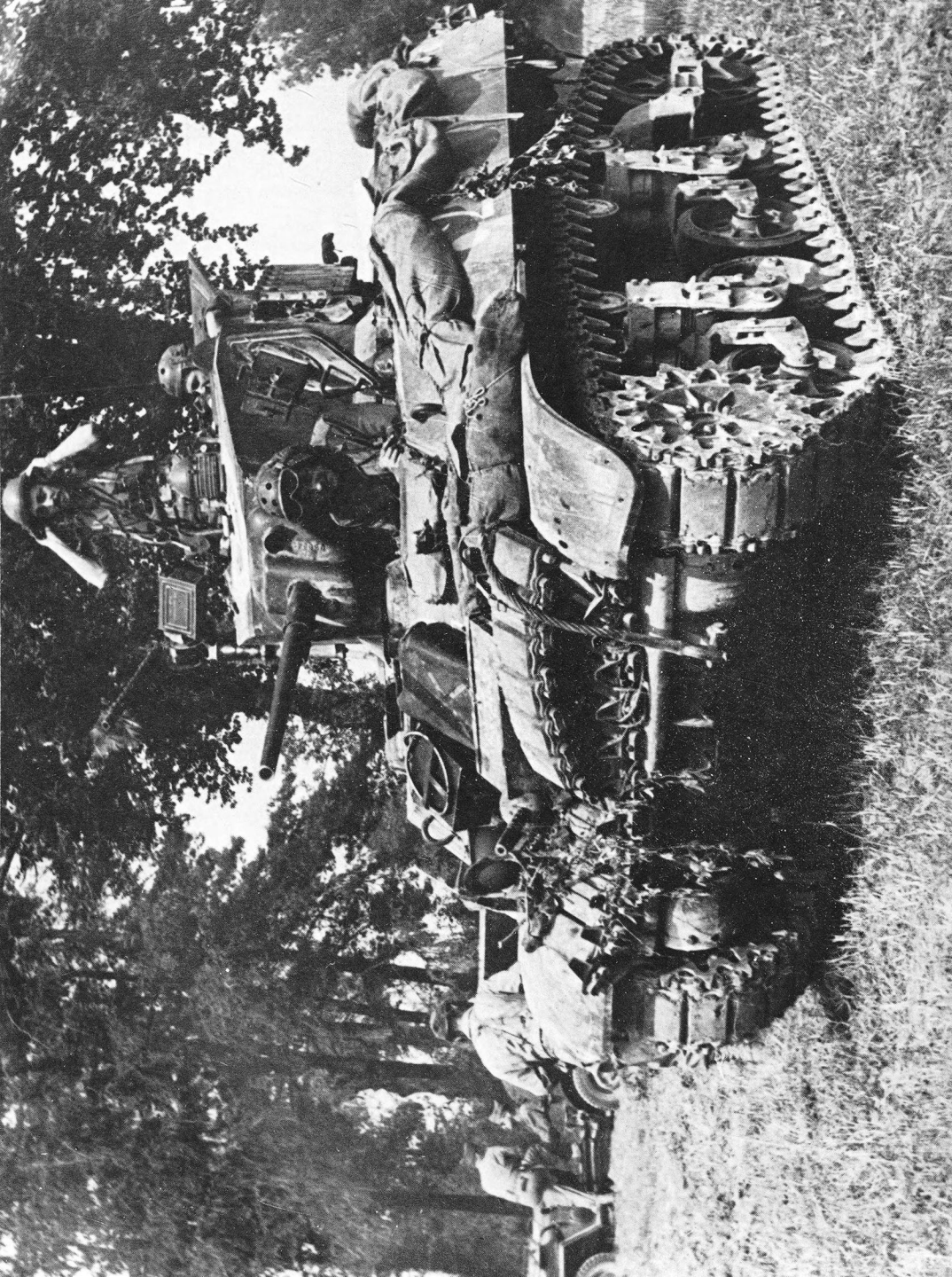
UK 1941

Derived from the line of Cruiser tanks designed during the 1930s, the Crusader was pressed into production in 1939 without sufficient development and testing. It was the mainstay of the British armoured forces in the Western Desert during 1941-1942 until the Battle of El Alamein and the advent of the Sherman. Though capable of speeds in excess of 30mph the Crusader, with its thin armour and inadequate main armament, was no match for the tanks of the Afrika Korps and because of its inherent unreliability suffered many losses from minor breakdown and mechanical failure. The Mark 1 was armed with the 2-pounder and an auxiliary turret mounting a 7.92mm Besa machine gun. This sub-turret was dispensed with during production of the Mark 2 (and was subsequently removed from many Mark 1s) because of poor ventilation and the difficulty of escape in an emergency, the space being used for extra ammunition stowage. In May 1942 the Mark 3 appeared with the 6-pounder but because of the bigger gun and bulkier ammunition the crew was reduced to three. Production ceased in 1943 after 5,000 had been built. After the North African campaign the Crusader was withdrawn from front line service but was used for training purposes until the end of the war.

Left: Crusader Mark I with auxiliary machine gun turret removed.

Below: Crusaders moving forward in the Western Desert, 1943.
/ Crown Copyright





M3/M5 Stuart (Honey)

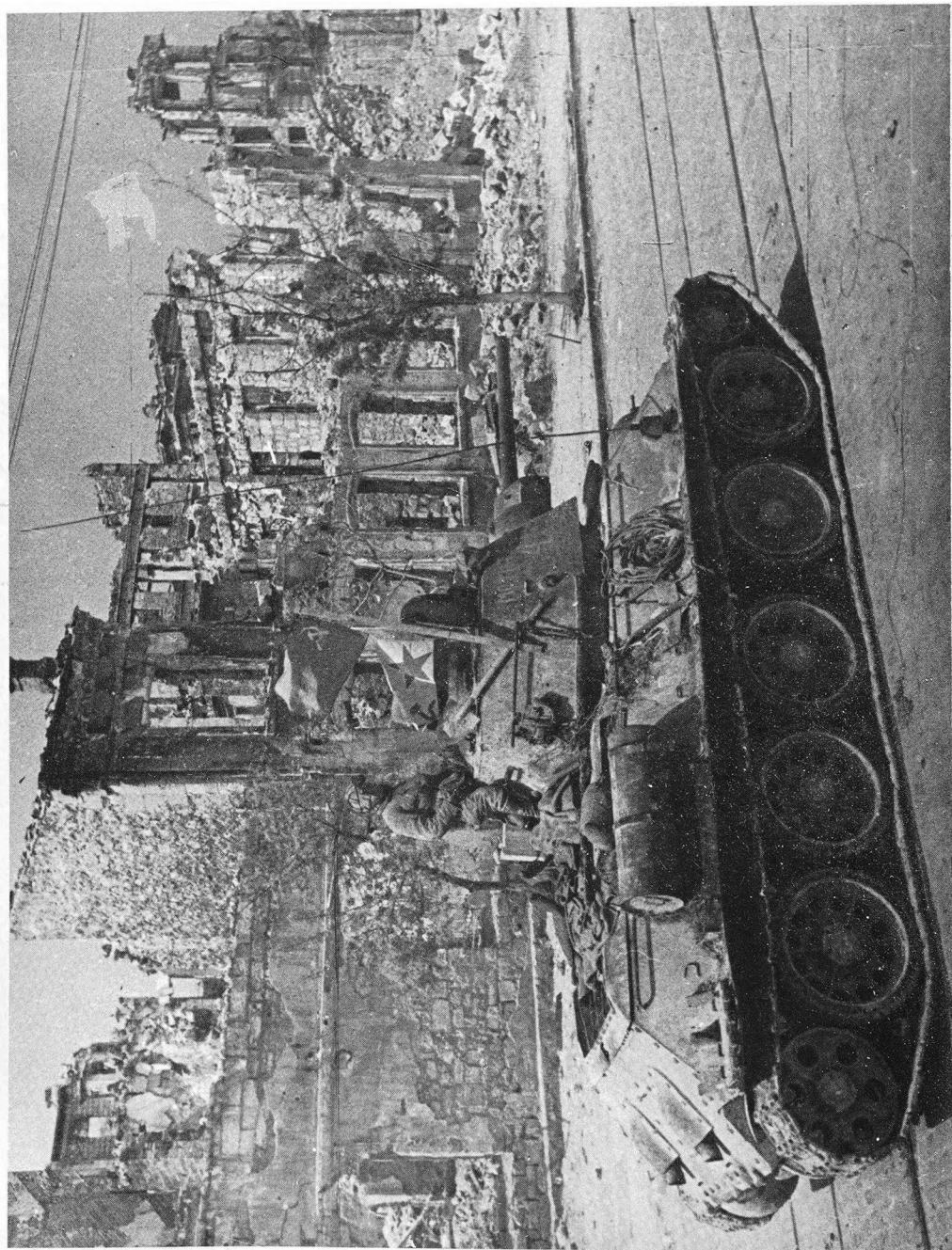
USA 1941

The standard American light tank at the outbreak of World War II was the M2A4. This was followed in March 1941 by the M3 with heavier armour and the trailing idler wheel, characteristic of the M3/M5 series. Known officially to the British as Stuart, the M3 saw extensive service in the North African campaign where its reliability and excellent performance earned it the nickname — Honey. Many improvements were incorporated throughout production including a welded turret in place of the earlier riveted one, additional fuel in jettison tanks and a gyro stabiliser for the 37mm gun to permit firing on the move. The M3A3 was a comprehensive redesign with an enlarged, all welded hull and sloping glacis plate. The M5 embodied twin Cadillac engines and was the first tank to have an automatic transmission. The final model was the M5A1 and was produced until October 1943 by which time 13,859 of the series had been built. The principal reconnaissance tank of the US Army throughout the war, the M3/M5 was a popular vehicle and served in many armies and in all theatres. Its narrow hull, however, precluded the mounting of a larger gun than the 37mm and it was superseded by the M24 Chaffee.

Left: M3A3 of the French 2nd Armoured Division, France 1944.

Below: M3 Stuart of the 8th King's Royal Irish Hussars, one of the first British regiments to be equipped with this fast, agile tank, 1941. / IWM



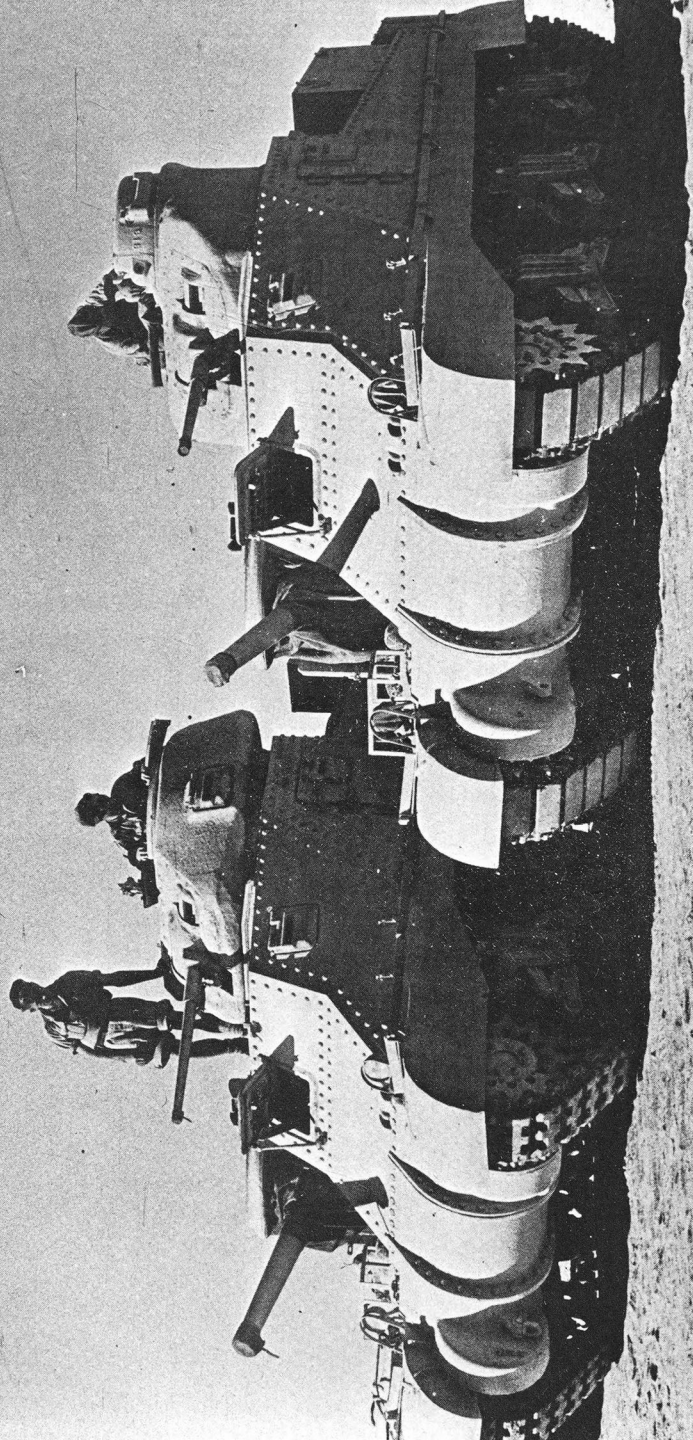


The T-34 was one of the most successful tanks ever built. It was a classic example of the ideal balance of firepower, armour protection and mobility. The notable features were its low cost of production, well sloped armour, efficient and reliable engine, rugged Christie suspension system and high velocity 76.2mm gun. None of these features were new but their combination in the T-34 made it an outstanding creative design. Its appearance in July 1941 rendered all German tanks obsolete overnight and it was considered by the Germans to be the best tank in the world up to 1943. The T-34 could destroy the Pzkw III and IVs at all normal combat ranges while remaining immune to their guns and its excellent agility because of its broad tracks, allowed it to negotiate terrain where the German tanks became hopelessly bogged. By Western standards it was crude and cramped but was ideally suited to the massive armoured battles of the Eastern front where the life expectancy of tanks was measured in hours and numbers were decisive. 53,536 T-34s were produced during World War II and it has had a profound effect on all subsequent tank designs. Many thousands remain in service to this day and it is still an effective fighting vehicle as the wars in Angola and Ethiopia have proved.

Left: T-34/76 (1943 Production Model). This T-34, named *Avenger*, led the assault during the liberation of the city of Sebastopol, 1944. / *Novosti*

Below: A T-34/85 crashing through German anti-tank obstacles. This model first appeared in late 1943 with an 85mm gun in an enlarged three man turret. / *Novosti*





M3 Lee/Grant

USA 1941

The German invasion of France in May 1940 galvanised American industry into action and, incredibly, a tank was designed, tested, had a factory built to manufacture it and was in full production within 11 months. Thus was born the Medium Tank M3 armed with a turret mounted M5 37mm gun and an M2 75mm in a sponson in the right-hand side of the hull. The M3 first saw action in May 1942 at the Battle of Gazala in North Africa and soon proved popular with the British troops as for the first time they were able to fight German tanks on equal terms. The M3 Medium was named the Lee and when mounting a British-designed turret the Grant, after famous generals of the American Civil War. 6,258 M3s were produced between July 1941 and August 1942 3,352 of them by the Chrysler Corporation. Six hundred fought at the Battle of El Alamein and the US Army used the M3 during the invasion of French Morocco and Tunisia. It was superseded during 1943 by the M4 Sherman but continued in service until the end of the war in the Far East where the 75mm proved very effective in destroying Japanese bunkers and providing fire support to the infantry.

Left: M3 Grant Mark I (left) and M3 Lee Mark I showing the differences in the turret design.

Below: M3 Lee of the 3rd Carabiniers, Burma, 1945. / IWM





Churchill

UK 1941

The Infantry Tank Mk IV Churchill was derived from a design for a 'shelled area' tank on the assumption that a conflict in Europe would be similar to the trench warfare of 1914-18. Due to the urgent need for tanks to meet the expected invasion of Britain following the evacuation from Dunkirk, production of the Churchill began straight from the drawing board and consequently early models suffered from a number of teething troubles. After these had been resolved, the Churchill proved to be one of the most successful and versatile British tanks of World War II. Initially armed with the outmoded 2-pounder it was subsequently fitted with the 6-pounder and finally the 75mm, but never equalled contemporary German tanks in terms of firepower. First committed to action against impossible odds in the Dieppe raid of August 1942, the Churchill went on to prove its worth amongst the precipitous hills of Tunisia and in the waterlogged forests of the Reichswald where its excellent agility confounded the enemy who believed the terrain in both cases to be impassable to tanks. The Churchill was used as the basis for many of the specialised tanks, known as 'The Funnies', which spearheaded the D-Day landings — such as the flame throwing Crocodile and AVRE (Armoured Vehicle Royal Engineers) for destroying pillboxes and strongpoints.

Left: Churchill Mark IV armed with the 75mm gun, North-West Europe, 1944.

Below: Churchills Mark I to III on manoeuvres in England 1941. The Mark I was armed with a 3in close support howitzer in the hull in addition to the turret mounted 2-pounder.





M4 Sherman

USA 1942

The M4 Sherman was arguably the most significant AFV in the history of mechanised warfare. It was basically a development of the M3 Medium Tank Lee/Grant with a 75mm dual purpose gun in a fully revolving turret which overcame the shortcomings of the earlier vehicle. Tank for tank it was never a match for its German opponents but its success was due to its availability in vast numbers and its adaptability to a multitude of purposes. The Sherman had many attributes; due to its simple design it was cheap and simple to manufacture, it was rugged, easy to maintain and above all reliable. The Sherman made its combat debut at the Battle of El Alamein in October 1942 and subsequently fought in every campaign and theatre of war including the Russian Front. In the rapid advance across Northern Europe in 1944 it proved ideally suited to the offensive tactical doctrine pursued by the Allies. The mass production of the Sherman was an incredible industrial achievement. Between 1942 and 1945 48,071 Shermans and variants were manufactured, more than twice the number of tanks built by the Germans throughout the war. Like the Spitfire and the T-34, the Sherman was one of the great weapons in history and its contribution to the Allied victory of World War II was immeasurable.

Left: M4A4 Sherman, North-West Europe, 1944.

Below: Shermans of the 5th Canadian Armoured Division on parade at the end of World War II. Every second tank is a Sherman Firefly armed with the 17-pounder gun.





Tiger I

Germany 1942

Based on designs originated before the war, the Tiger was armed with the highly effective 88mm KwK 36 gun and, with its heavy armour, was the most powerful tank in the world when introduced. Production was undertaken by Henschel and 1,350 were built between 1942 and 1944. The major shortcoming of the design was the mechanically unreliable 650hp V12 Maybach engine, so that many Tigers were lost through minor breakdowns as it was often impossible to recover a tank weighing 56 tons. Tigers were first committed to action in November 1942 on the Russian Front and were employed in the elite units of the German Army, usually forming the spearhead of an attack with the lighter Panzer IIIs and IVs in support. They also fought in Tunisia during the final days of the North African campaign and subsequently in Sicily, Italy and North-West Europe. In June 1944, amongst the narrow hedgerows of Normandy, a single Tiger commanded by Germany's foremost tank ace Lt Michael Wittman, engaged the leading elements of the 7th Armoured Division and destroyed 25 tanks and vehicles before retiring unscathed, having blocked the advance of the entire division. Such exploits fostered an awesome reputation and few tanks have inspired such respect in their opponents as the Tiger.

Left: PzKpfw VI Ausf E Tiger I.
/ Chamberlain Collection

Below: PzKpfw VI Ausf E Tiger I at the Battle of Kursk, July 1943, the largest tank battle in history.
/ Chamberlain Collection



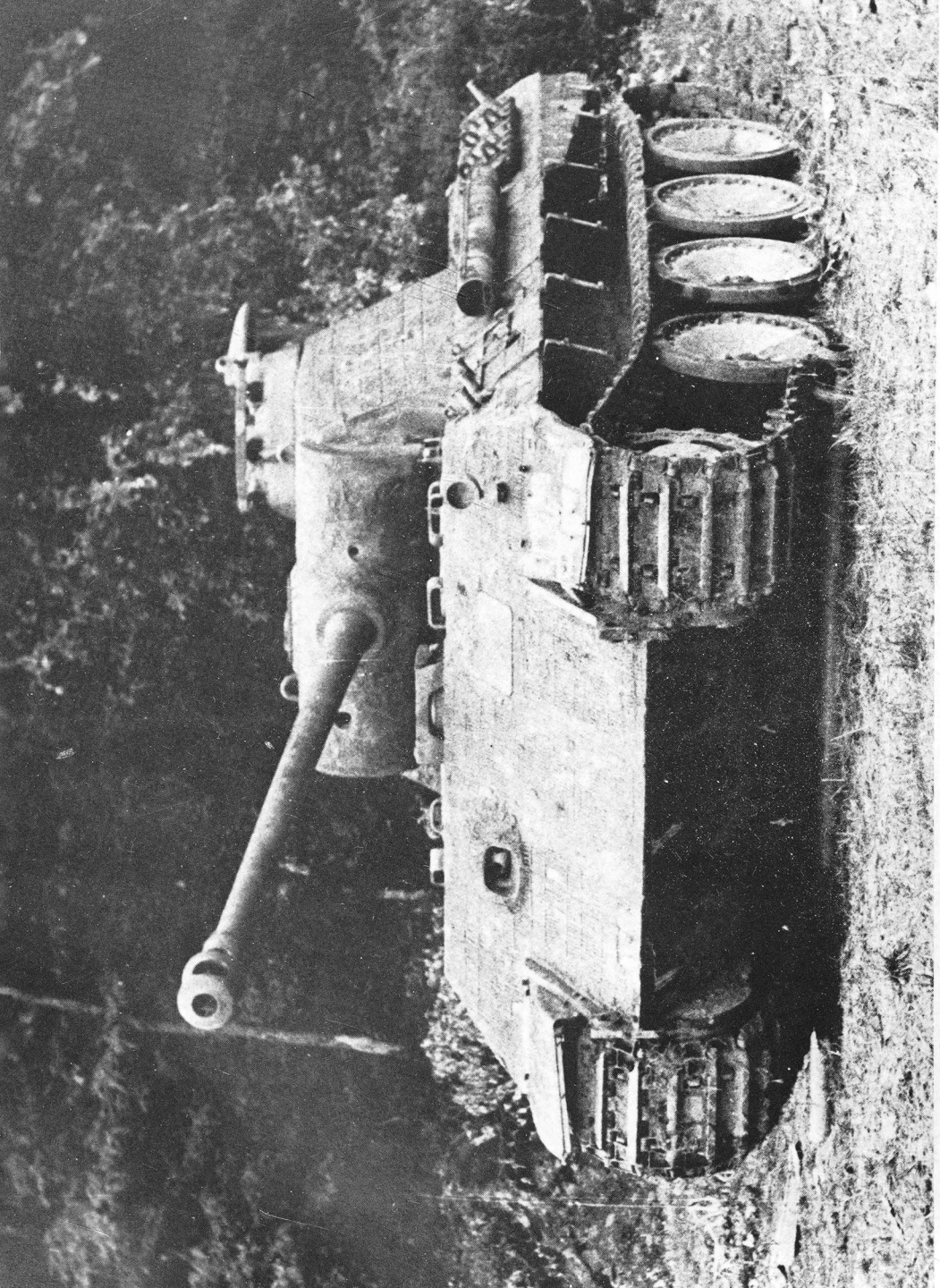


The Cromwell was the successor to the Crusader, having evolved through two interim models the Cavalier and the Centaur. Designed as a Cruiser tank, production began in January 1943 under the auspices of Leyland Motors. Of conventional layout with a crew of five, Cromwell was powered by the Meteor engine, a de-rated version of the famous Merlin aero-engine used in the Spitfire and the Hurricane. This gave a top speed of 40mph making Cromwell the fastest tank of World War II. In order to save undue wear on the suspension components the speed was governed to 32mph. The early marks of Cromwell were armed with the 6-pounder but in the light of experiences in the North African campaign a gun with an increased high explosive capability was deemed necessary to deal with enemy anti-tank guns. In consequence Marks IV-VII mounted the dual purpose 75mm. Though the Sherman was numerically the most important tank of the British Army in World War II, the Cromwell served in the reconnaissance regiments of the 6th, 11th and Polish Armoured Divisions and as the mainstay of the 7th Armoured Division. It was with the 'Desert Rats' that Cromwell first saw action after the D-Day landings, but it was not until the break-out of the Normandy bridgehead that its speed, agility and mechanical reliability proved themselves during the Allies' rapid advance across northern Europe.

Left: Cromwell Mark IVs of the 10th Rifle Regiment of the Polish Armoured Division moving through the ruins of Caen during the drive for Falaise to close the pocket around the German 7th Army.

Below: Cromwell Mark IV of the 2nd Northamptonshire Yeomanry, the reconnaissance regiment of the 11th Armoured Division, liberating the Norman town of Flers, July 1944. / IWM





Panther

Germany 1943

The emergence of the T-34 in 1941 came as a painful surprise to the Germans and plans were immediately laid to produce a rival tank. The design produced by Daimler-Benz was almost an exact duplicate of the Russian tank but a more German design by MAN was chosen. After many teething problems due to its increasing weight during development, the Panther first saw action during the Battle of Kursk in July 1943, the largest tank battle in history. The Panther proved more than a match for the T-34, indeed for almost all Allied tanks, and was the finest medium tank of World War II. Weighing 45 tons it featured well sloped armour and was armed with a long, overhanging 75mm KwK 42 L/70 gun which, coupled with the superior optical equipment and excellence of the crews, exacted a fearful toll of Allied tanks at long ranges. In fact Allied tank crews worked on the assumption that three of their tanks would be knocked out before a Panther could be outflanked and destroyed. This successful design had great potential for development and an improved model, the Panther Ausf F was proposed, mounting an 88mm in a narrower turret and incorporating such advanced features as a stereoscopic range-finder and infra-red night fighting equipment, but the war ended before it could be used. The French Army employed a number of Panthers in the postwar years.

Left: Panzerkampfwagen V Panther Ausf A. / RAC Tank Museum

Below: Early production Panther Ausf A crashing through a hedgerow in Normandy, 1944.





The IS series of Soviet heavy tanks, named after Joseph Stalin, was a natural evolution from the KV-1. Early in 1943, the KV-85 was introduced armed with the M-1944 85mm gun, but with the appearance of the heavier German tanks such as the Tiger and Panther, a more powerful armament still was needed. By the end of 1943 the IS-1 had appeared featuring a new hull of superior ballistic shape, a revised suspension and an improved engine and transmission which greatly increased manoeuvrability. It was initially armed with the same 85mm but was soon upgunned with the D-10 100mm gun. This in turn was superseded by an even more powerful model with a new turret mounting the 122mm D-25 M-1943 gun which was only slightly inferior in performance to the 88mm KwK 43 of the Tiger II. A new tank weighing 45 tons followed in 1944 designated the IS-2 with a redesigned glacis plate and hull giving increased protection for less weight — a rare achievement in any tank design. The 3,502 IS-2s built in 1944/45 equipped the independent heavy tank regiments of the Supreme Command Reserve and were employed to break through heavily fortified defensive positions. A few IS-2s remain in service with the Cuban army.

Left: IS-2s in the streets of Berlin during the final battles of World War II, May 1945. / *Novosti*

Below: IS-2s advancing into East Prussia, 1945. Note the rear facing machine gun, a characteristic of Soviet heavy tanks. / *Novosti*





M4A3E8

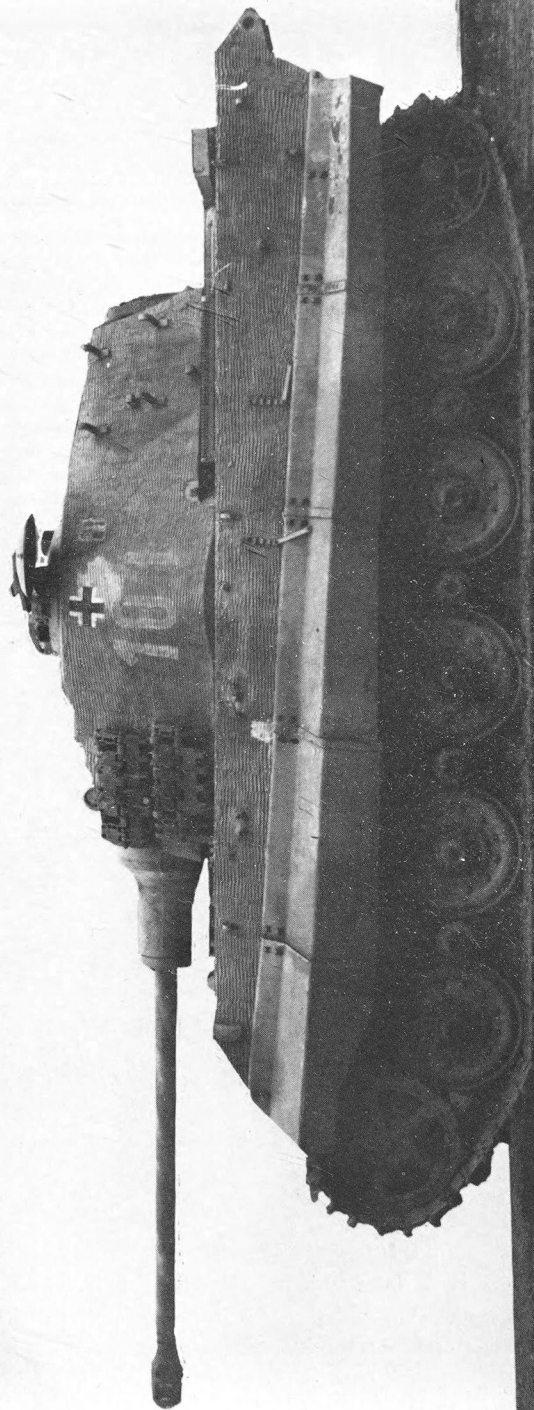
USA 1944

By 1944 numerous improvements had been made to the basic M4 Sherman and it bore little resemblance to the final models to emerge. The original main armament of the M3 75mm gun had been replaced by the high velocity M1 76mm in an enlarged T23 turret. Because of its relatively thin, slab-sided armour and poor ammunition stowage, the M4 had a marked tendency to catch fire when hit. Indeed the grim German nickname for the Sherman was the 'Tommy Cooker' and to overcome this defect the ammunition was stowed in water jackets which, if penetrated, drenched the rounds in water, reducing the risk of fire and explosion. The armour protection was improved by a redesigned hull front and 47° glacis plate which also simplified production. To improve cross-country mobility and because of the increased weight, a horizontal volute suspension system (HVSS) with wider tracks was introduced. The Shermans incorporating all these improvements were designated M4A3E8s but were known to the troops as 'Easy Eights'. Since World War II the Sherman has served in many armies and fought in several major wars, notably with the Americans and Canadians in Korea, with the Indians in the 1965 Indo-Pakistan conflict and with the Israelis in all the Middle East wars.

Left: Israeli Sherman M50 armed with the French 75mm gun, during the fighting in the Golan Heights, October 1973. / Israeli Army

Below: Sherman M4A3E8, Korea, 1951. / US Army





Tiger II (King Tiger)

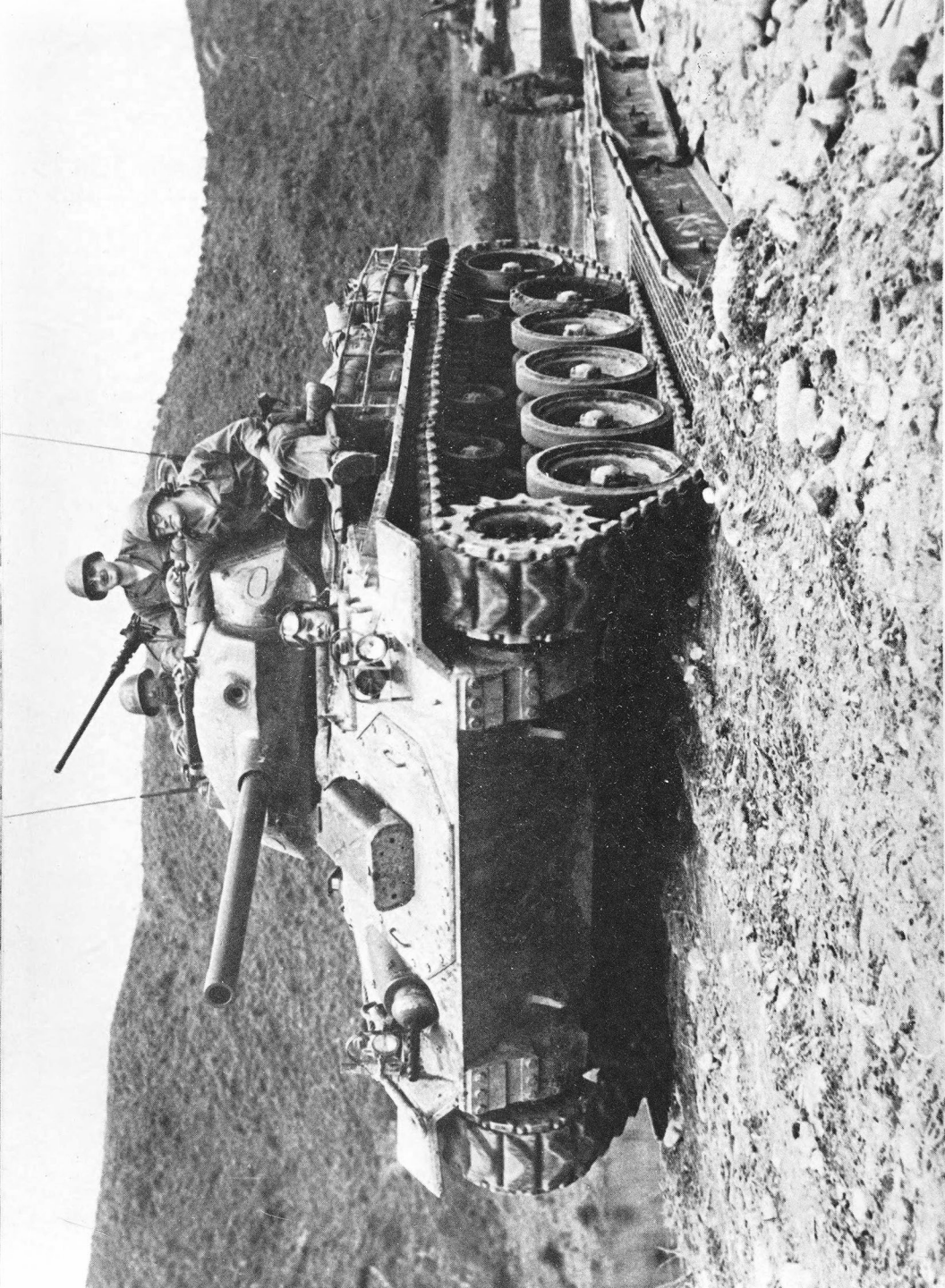
Germany 1944

Weighing 68 tons, the Tiger II was the heaviest tank to see operational service during World War II. It was however seriously under-powered, using the same engine and gearbox as the Tiger I, and was also mechanically unreliable. Nevertheless it was suited to the defensive tactics adopted by the Germans towards the end of the war and its powerful 88mm KwK 43 gun could outrange and destroy any Allied tank. Its well sloped armour, similar in configuration to the Panther, was up to 185mm thick. Built by Henschel, production began in February 1944. The first 50 tanks were fitted with a turret designed by Porsche but subsequently a turret with a flat front face that was simpler to manufacture and afforded greater protection was installed. The Tiger II was first encountered by the Allies in June 1944 during the battle for Normandy and proved a formidable tank to destroy. During the Ardennes offensive (Battle of the Bulge) it was committed in considerable numbers but because of its great bulk and poor mobility, its effectiveness was restricted. Various known as the King Tiger or Royal Tiger, 489 of the Tiger II were built up to the end of the war.

Left: PzKpfw VI Ausf B Tiger II.
/ Chamberlain Collection

Below: PzKpfw VI Ausf B Tiger II, also known as King Tiger or Royal Tiger.
/ Chamberlain Collection





M24 Chaffee

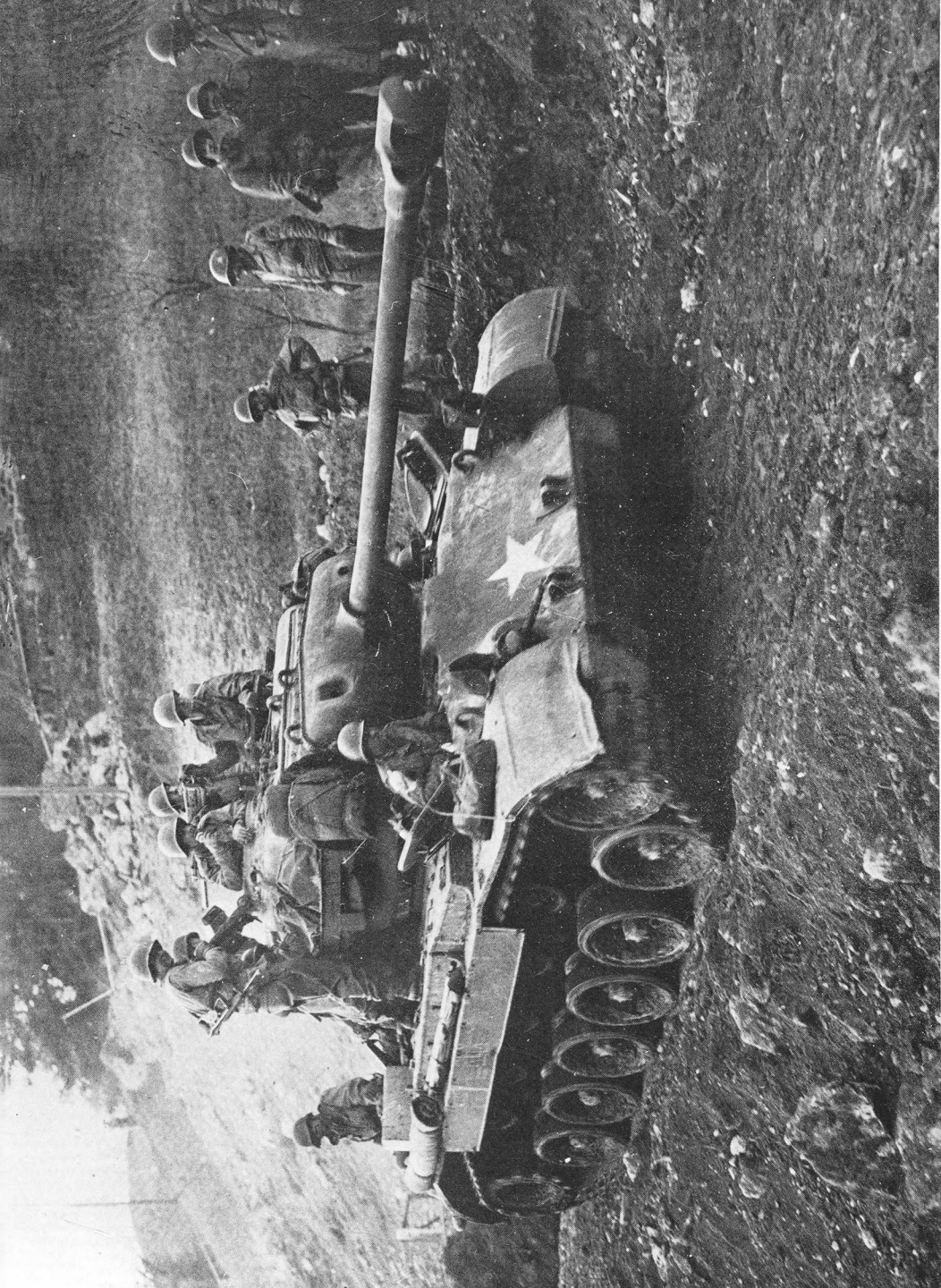
USA 1944

Last in the line of World War II American light tanks, the M24 Chaffee entered service with the US Army late in 1944 and saw only limited action before the end of hostilities. 4,070 Chaffees were manufactured including a number of special purpose variants, the main contractors being Cadillac and Massey-Harris. Unlike its lightly armed predecessors, the M24 mounted a 75mm gun adapted from an aircraft cannon. The major assemblies such as the engine and transmission were designed for ease of removal thus simplifying maintenance in the field. During the early days of the Korean war, the only tanks available to stem the attack of the North Korean T-34/85s were 50 M24 Chaffees rushed to the front line from occupation duties in Japan. The enemy advance was finally held at the perimeter of the port of Pusan where Chaffees were dug in as artillery, allowing the build-up of the United Nations Forces. The M24 was also used by the French in Indo-China and during the war in Algeria. In December 1953 during the siege of Dien Bien Phu, 10 Chaffees were dismantled and flown in pieces to the beleaguered forces. Painstakingly reassembled by hand, they were to prove invaluable in the defence of the fortress before its eventual surrender.

Left: M24 Chaffees of the 1st US Cavalry Division crossing the Imjin River, June 1951. / US Army

Below: M24 Chaffees of the French Expeditionary Force, Indo-China, 1954. / ECP Armees





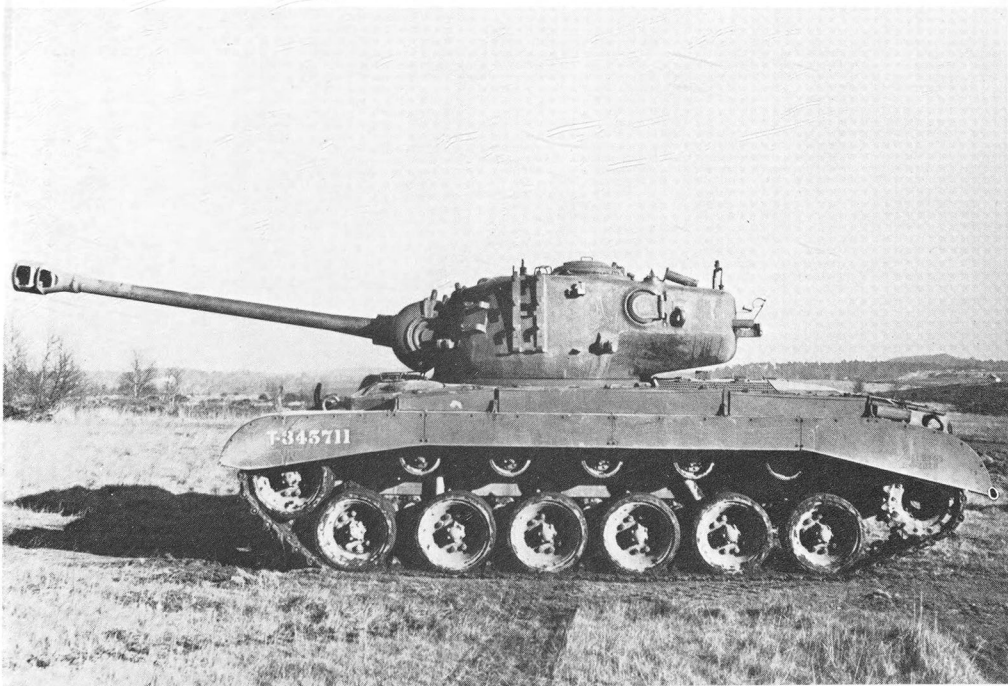
M26 Pershing

USA 1945

US Army doctrine during World War II dictated that the destruction of enemy tanks was the responsibility of specialised tank destroyers. These were lightly armoured, highly mobile vehicles mounting high velocity anti-tank guns. This concept delayed the development of a tank with a main armament capable of defeating the powerful German tanks encountered after the Normandy landings. Demands from the frontline troops led to the introduction of the M26 Heavy tank, Pershing, armed with a 90mm gun comparable in performance to the 88mm KwK 36 of the Tiger I. Production began in November 1944 and the first 20 were shipped to Europe arriving in January 1945. Divided between the 3rd and 9th US Armoured Divisions, they saw only limited combat during the closing weeks of the war. One notable action was the capture of the Remagen railway bridge over the Rhine. Weighing 46 tons with armour up to 102mm thick, the M26 was powered by a Ford GAF V-8 500hp petrol engine giving a top speed of 30mph. The Pershing was also employed in Korea together with an improved model known as the M46 Patton. The Pershing was a milestone in American tank design as it formed the basis for the line of postwar medium tanks culminating in the M60 series.

Left: M26 Pershing of the 11th US Armoured Division, part of General Patton's Third Army, Austria, May 1945.
/ US Army

Below: M26 in service with the British Army.





IS-3

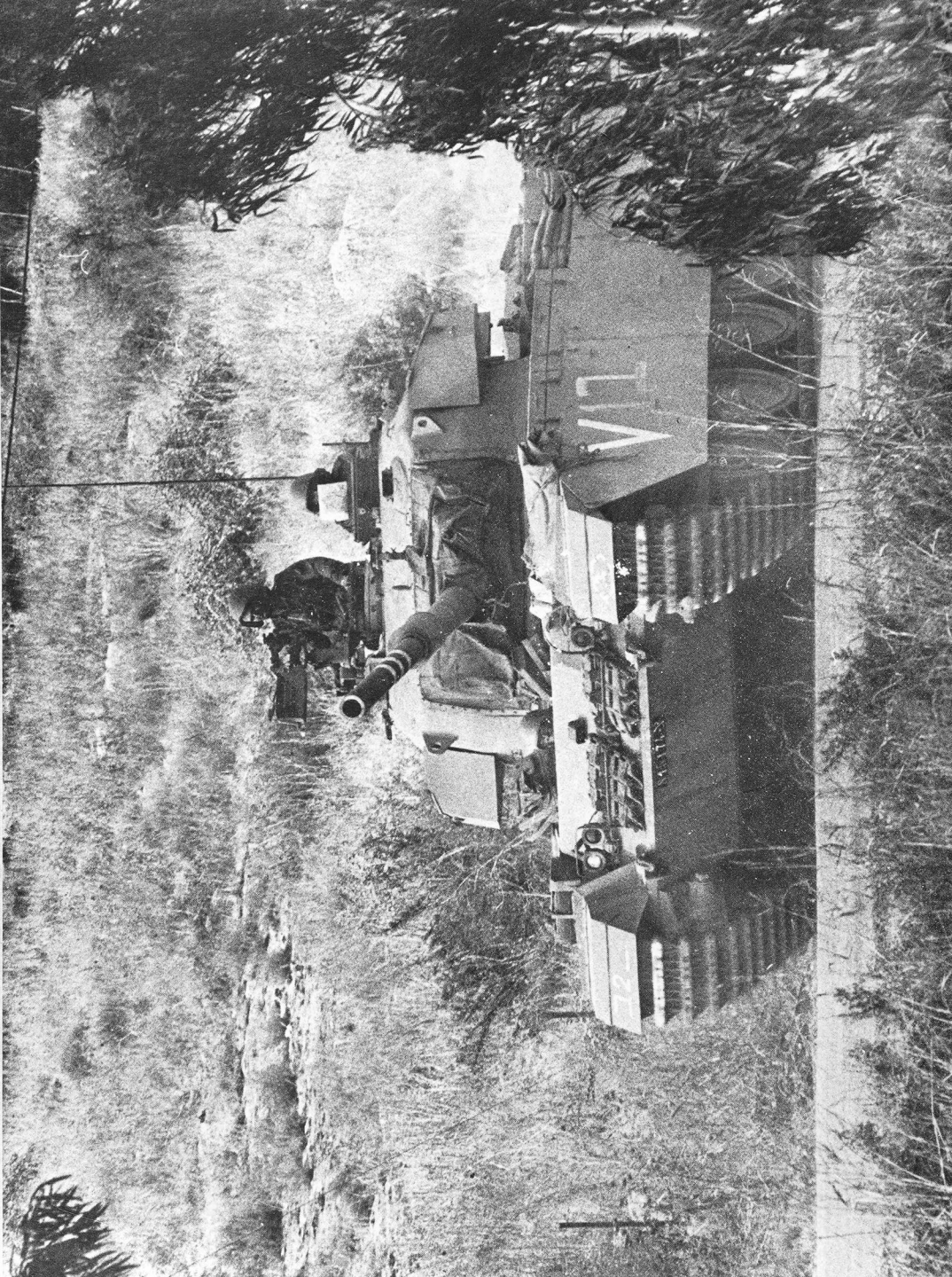
USSR 1945

The last of the Soviet heavy tanks to see service in World War II was the IS-3. Its appearance at the victory parade in Berlin caused a sensation as the Western Powers had nothing to compare with this powerful tank. With a 122mm gun in a cast turret of excellent ballistic shape which has become the basis for many subsequent turret designs, it represented a remarkable achievement in mounting such a heavy weapon in a tank of low silhouette and a weight of 45 tons. Throughout the Cold War it remained a potent threat and much design and development effort was expended to counter its menace. The Americans produced a line of expensive heavy tanks, culminating in the M103 and the British built a number of improvised tank destroyers based on the Centurion and eventually the Heavy Gun Tank, Conqueror. In fact all these tanks were of limited tactical use and the IS-3 itself proved to be an inefficient design. The only time it saw combat was with the Egyptian Army during the Six Day War when, because of its slow rate of fire and engagement times, it was outfought by the fast reacting Israeli tanks. The IS-3 was superseded in the 1960s by the T-55 and T-62 Main Battle Tanks.

Left: IS-3. Due to the shape of the sharply angled glacis plate the IS-3 was known to Soviet tank crews as the Pike.
/ Novosti

Below: IS-3s at a Red Square parade showing the excellent ballistic shape of the turret. / Novosti





Centurion

UK 1946

The Centurion must rank as one of the truly great tanks of all time. No other tank has fought in so many diverse campaigns with such consummate success. Design work began in 1943 incorporating all the lessons learned from four years of warfare. Six prototypes were rushed to Germany in May 1945 but arrived too late to be used in action. For over 20 years, the Centurion was the British Army's Main Battle Tank until it was withdrawn from service in 1973. It was also purchased by 14 nations and is still employed in several armies, notably that of Israel. The tank first saw combat amongst the barren hills of Korea in 1951 and subsequently fought at Suez, in the Radfan, the Indo-Pakistan Wars, the Arab-Israeli Wars, the Jordanian Civil War, the Lebanon and with the Australians in South Vietnam. On every occasion the Centurion proved capable of absorbing great punishment whilst remaining battleworthy and superior to many tanks of more recent design. Produced in 13 marks, it has been uparmoured and upgunned twice, being the first tank to mount the highly effective L7 105mm gun. The Israelis have extensively modified their Centurions with the excellent American Continental diesel engine and new transmission to improve the tank's speed and radius of action which have always been its weakest features.

Left: Upgraded Centurion in the Golan Heights, Yom Kippur War 1973. It was during the opening days of the October War that the Centurions of the Israeli 7th Armoured Brigade fought one of the greatest armoured battles ever.
/ Camera Press

Below: A modified Centurion Mark 5 of A Squadron, 1st Armoured Regiment Royal Australian Armoured Corps, South Vietnam 1970. */ Australian Army*





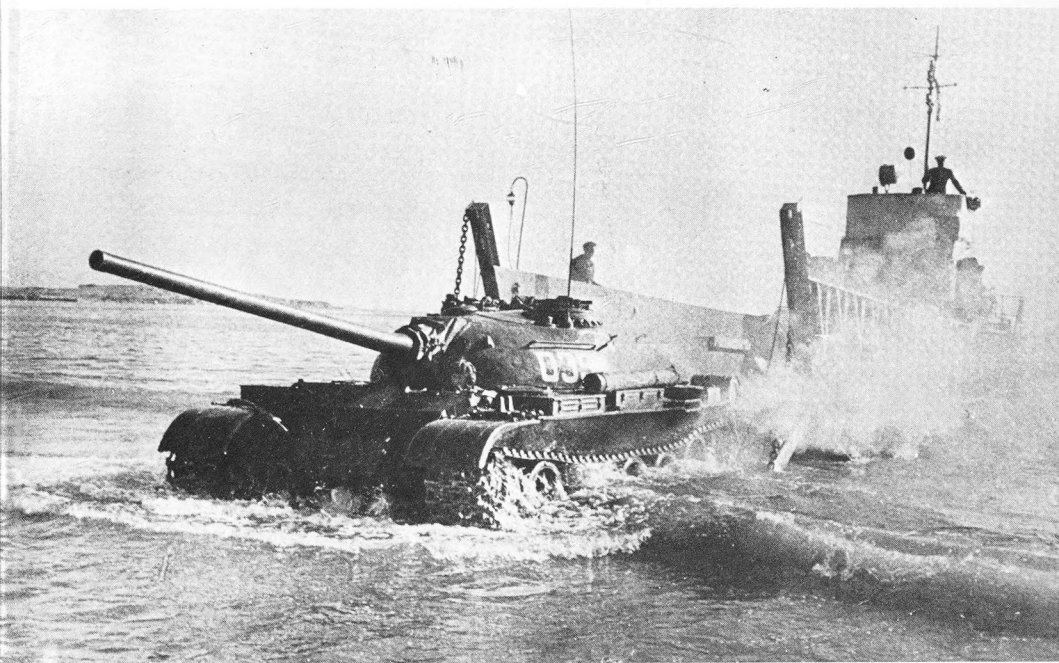
T-54/55

USSR 1950

The T-54/55 series was produced in greater numbers than any other battle tank. More than 55,000 have been built since 1949. A simple and robust tank, it is armed with an effective 100mm D-10T gun. Because of its basic design and vast production numbers, the T-54/55 cost only half as much as contemporary Western tanks. Typical of Soviet designs, it embodies a low silhouette on the assumption that a tank that is hard to see is hard to hit. Though undoubtedly true, the reduction in the size of the vehicle has several disadvantages — namely a cramped interior with minimal crew comfort, less ammunition stowage space, a slow rate of fire and limited depression of the main armament — a distinct tactical shortcoming. Although designed for combat in Northern Europe, the T-54/55 has only fought in hot climates where its tendency to overheat has made conditions inside the tanks unbearable. It has seen combat in Vietnam, the Arab-Israeli Wars, the Indo-Pakistan War of 1971, and in the Horn of Africa and Angola. Improvements have been incorporated throughout production including infra-red night fighting equipment and a deep wading snorkel. Weighing 35 tons, it has good mobility and protection and, though not particularly reliable, the T-54/55 is simple to operate and remains an effective battle tank.

Left: T-55s advancing en masse.
/ Novosti

Below: T-54 disembarking from a landing craft. */ Tass*





M47 Patton

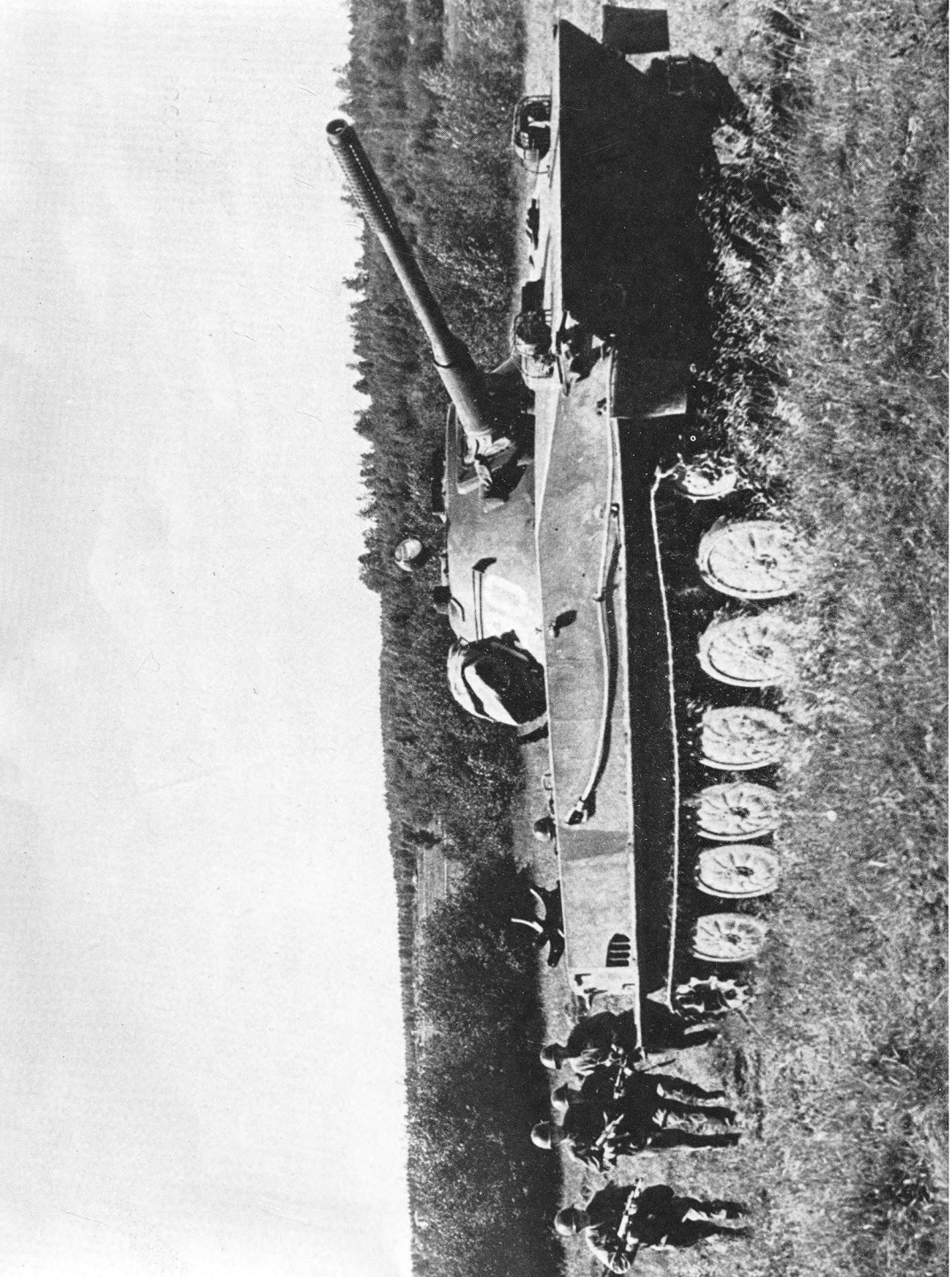
USA 1952

After World War II opinion in the United States was divided as to the value of Armoured Fighting Vehicles in the age of nuclear warfare. The Korean conflict reaffirmed the importance of tanks on the battlefield and accelerated the development of a range including the M41 Light Tank, the M103 Heavy Tank and the T42, a new medium tank to replace the M46 Patton. As an interim measure the turret of the T42, mounting an improved 90mm gun, was installed on a modified M46 chassis and the resulting vehicle designated the M47 Patton. It was however produced too late to see action in Korea. Built by the Detroit Tank Arsenal and the American Locomotive Company, the hull and turret, with its characteristic bustle, were of cast construction. Weighing 46 tons the tank was powered by a Continental V-12 air-cooled petrol engine at a speed of 30mph but had a range of only 80 miles. Under the Military Assistance Programme the M47 was issued to several NATO countries including France, Italy, Turkey and West Germany. It has been used in combat by the French at Suez in 1956, by the Pakistanis in 1965 and by the Turks during the invasion of Cyprus in 1974 and by the Jordanians.

Left: M47 Patton of the West German Army.

Below: M47 of the French Army, Suez, 1956. / ECP Armees





PT76

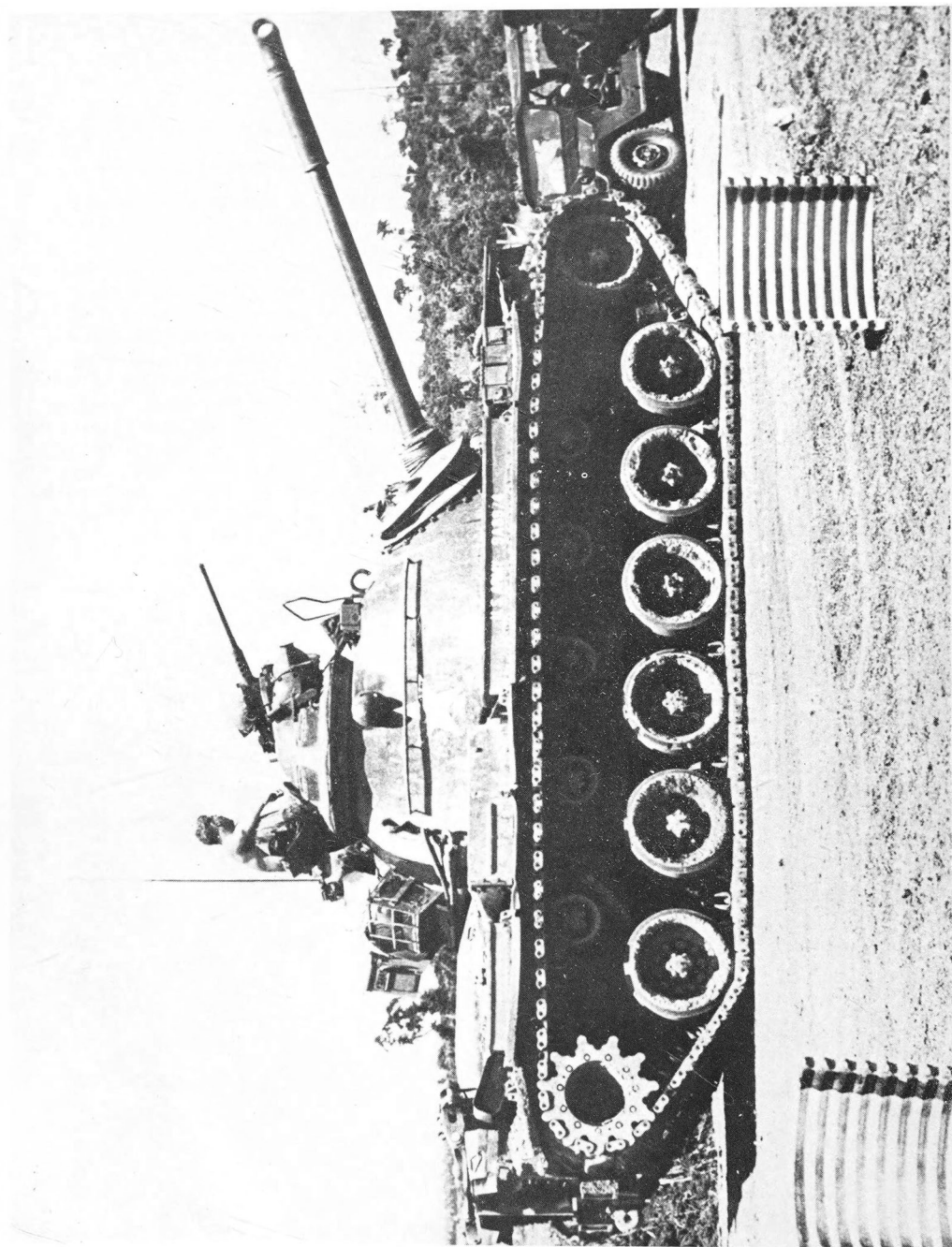
USSR 1952

The PT76 is a light amphibious tank based on the Penguin Arctic exploration vehicle. The tank's principal role is reconnaissance and it has been in service with Soviet armoured units since 1952. It is fully amphibious being propelled in water at a speed of 10km/hr by two hydro-jets driven off the main engine. Weighing 14 tons, it is powered by a 240hp V6 diesel engine and armed with the 76.2mm D-567 gun derived from that of the T-34. The PT76 has been exported to 21 countries but because of its thin armour has met with limited success in combat. Only against an enemy ill-equipped with anti-tank weapons has it proved effective. During the Indo-Pakistan War of 1971, the PT76s of the Indian Army spearheaded the drive into East Pakistan where their ability to negotiate the many waterways proved decisive, though the engines tended to overheat and seize up when crossing the wider rivers. The Egyptian PT76s engaged in the crossing of the Suez Canal in October 1973 did not fare so well and were decimated by the resolute Israeli defenders. The PT76 chassis has formed the basis for many Soviet tracked vehicles notably the Frog missile carriers and the excellent ZSU-23-4 self-propelled anti-aircraft gun 'Shilka'.

Left: PT76 Model 2. / Tass

Below: PT76 Model 1. / Tass





M48 Patton

USA 1953

The M48 is a further development of the M47 with a boat-shaped hull cast in a single piece, and a new rounded turret of improved ballistic shape which gives greater protection against armour piercing projectiles. Because of the Korean War, production began before adequate development had been completed and initial model suffered from a plague of defects. These were eventually rectified and the poor radius of action overcome by the adoption of a diesel engine in the M48A3 model. Armed initially with a 90mm gun the M48 was somewhat undergunned for a vehicle weighing 45 tons but has recently been extensively modified and fitted with the L7 105mm gun to bring it up to M60 standards. This upgunned model, the M48A5, is currently in service with the US National Guard. The Patton has been exported to 13 countries and used in combat by the Pakistanis in 1965, by the Jordanians and in Vietnam by the Americans and the South Vietnamese. Despite the appalling terrain in Vietnam it proved to be a rugged and reliable tank, especially effective against enemy bunker systems. The Israeli Pattons, also modified with diesel engines and 105mm guns, have proved very successful against the Soviet T-55s and T-62s of the Arab armies.

Left: M48A3 Patton, South Vietnam, 1968.

Below: M48A2 Pattons of the Israeli Army advancing in the Sinai Desert during the Six Day War, 1967.

/ Camera Press





AMX-13

France 1954

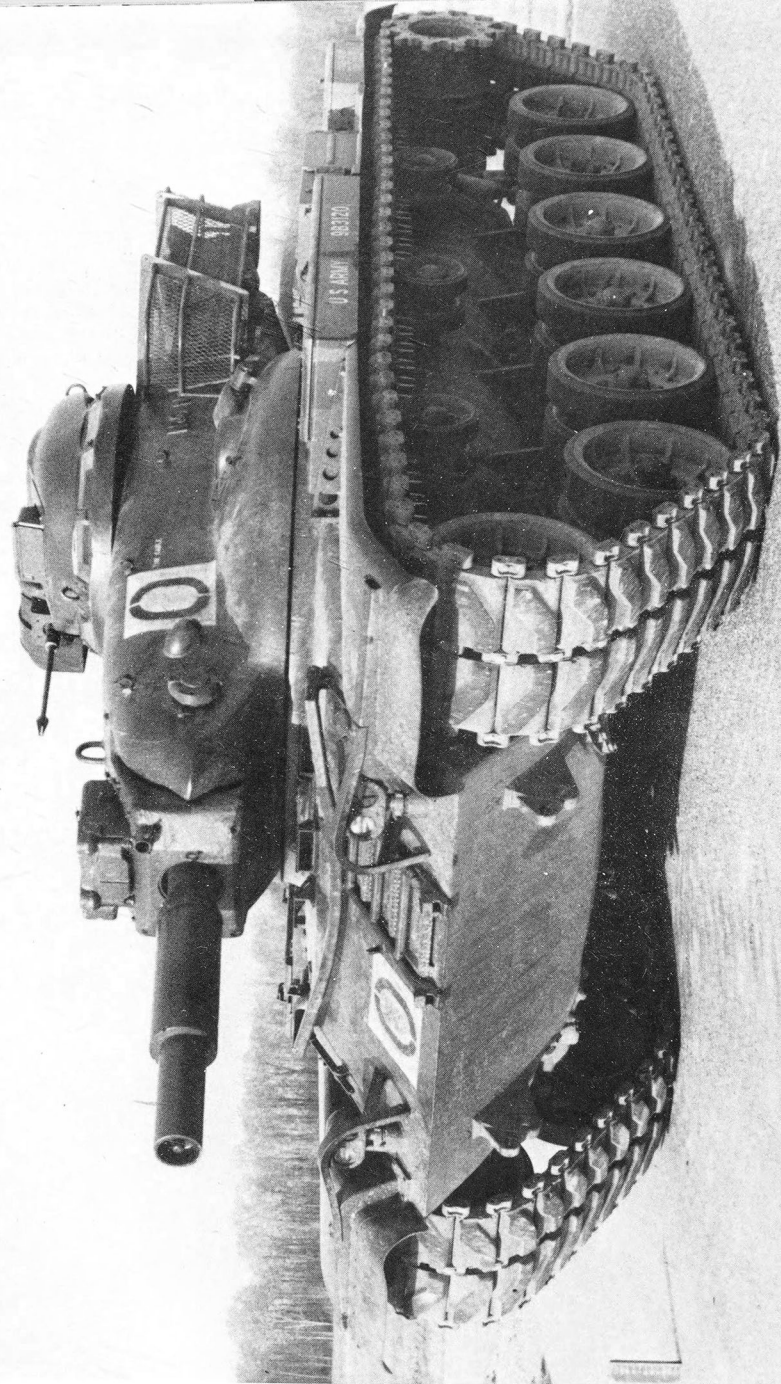
One of the most original tanks of the postwar era is the AMX-13 which was designed as an air-portable tank destroyer suitable for employment in the French colonial empire. Instead it has become the standard light tank of the French Army. The most notable feature of this tank is the oscillating turret whereby the complete upper part, with its fixed gun, elevates or depresses on trunnions carried by the lower. This configuration permits the installation of an automatic loader in the turret bustle with a high rate of fire, though only 12 rounds can be fired before replenishment is necessary. Originally armed with a 75mm adapted from that of the Panther, the AMX-13 has been upgunned with a 90mm firing fin-stabilised hollow charge projectiles. A further option is a 105mm gun and this weapon has been fitted to the AMX-13s of the Dutch Army. The AMX-13 has been in service with 28 countries and seen combat with the Israelis, both in 1956 and the Six Day War, and with the Pakistanis. The French also employed two squadrons during the Suez landings in 1956. The first tank to mount anti-tank guided weapons, the AMX-13 can carry four SS11 guided missiles, two each side of the main armament. Current models mount six HOT missiles.

Left: AMX-13 of the Dutch Army armed with the 105mm gun.

/ Royal Netherlands Army

Below: AMX-13. / ECP Armees





M60

USA 1960

The M60 is a development of the M48 armed with the British L7 105mm gun built under licence in the United States. In 1962 the M60A1 was produced with an elongated turret of superior ballistic protection. This 48 ton tank is powered by a 750hp turbo-charged diesel Continental engine and is capable of speeds of 30mph with a range of 325 miles. It is fitted with a coincidence rangefinder and a ballistic computer to ensure rapid engagement of targets. Though rather high by contemporary standards the M60A1 has been proven in combat by the Israelis during the Yom Kippur War where its ease of handling and efficient fire control system proved it to be a superior tank to the T-55 and T-62. The M60A2 is fitted with an entirely different turret mounting the Shillelagh weapon system which is a 152mm combined gun and missile launcher. A major modification programme is being undertaken to update the M60A1, to include a laser rangefinder, a stabilisation system for the main armament, a reliability improved engine and a superior torsion bar suspension system. This version is designated M60A3 and, currently being produced at the rate of 100 a month, is the standard main battle tank of the US Army and will remain in service well into the 1990s.

Left: M60A2 mounting the Shillelagh 152mm gun/missile launcher. / US Army

Below: M60A3, the current MBT of the US Army. / US Army





T-62

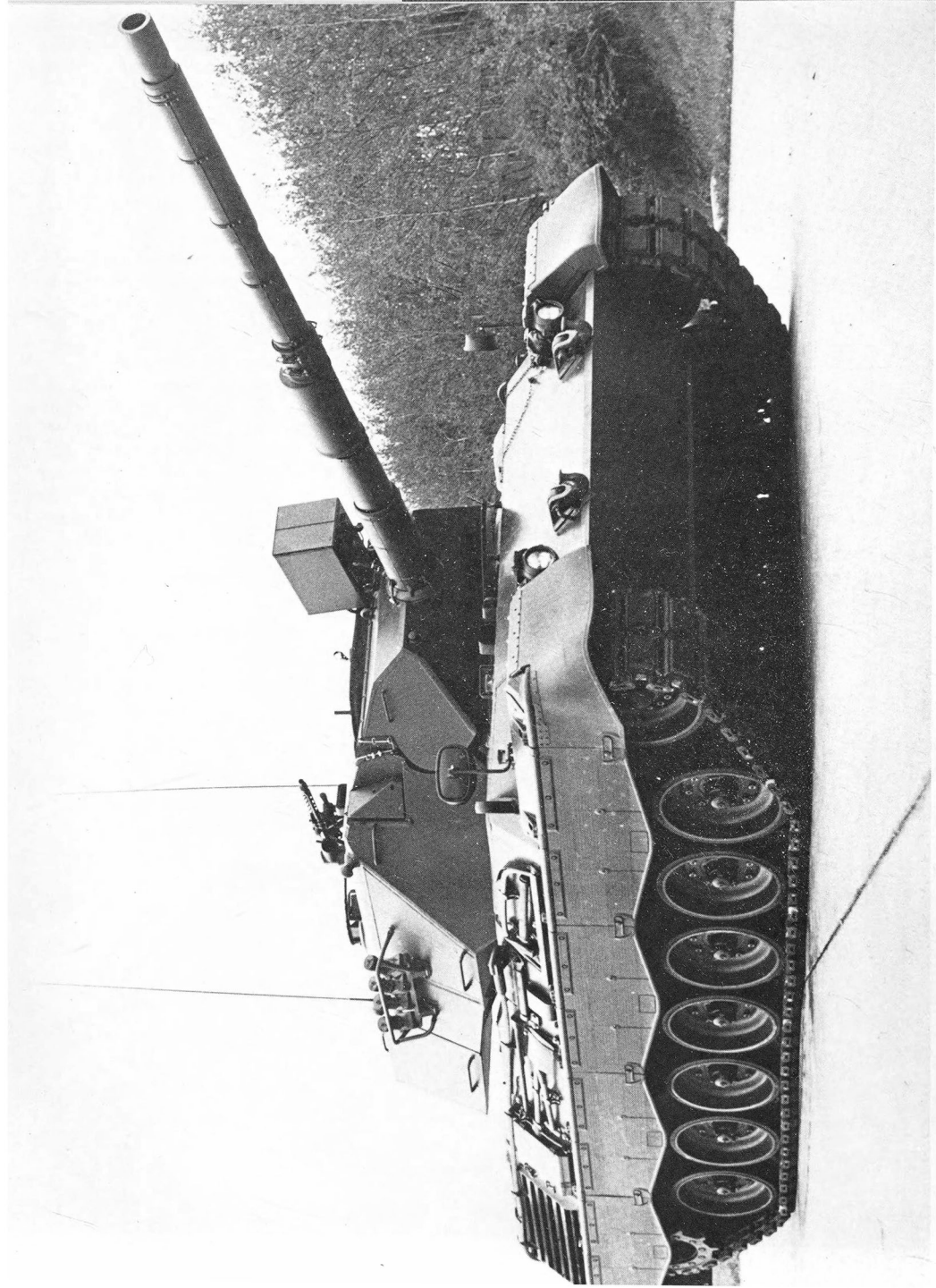
USSR 1963

The T-62 is a development of the T-55, being wider and longer to accommodate a revised turret of excellent ballistic shape mounting a 115mm U5-TS smooth bore gun. The T-62 is the first tank to mount such a weapon which has several advantages over the conventional rifled type, namely the barrel is simpler and cheaper to manufacture, it weighs less, has greater muzzle velocity which gives increased armour penetration, it does not wear out as quickly as rifled guns and it has less recoil for a given calibre permitting a lighter vehicle which in turn gives increased mobility. Against these advantages must be set the loss of accuracy of the Armour Piercing Fin Stabilised Discarding Sabot (APFSDS) projectiles at ranges over 1,500m. Soviet designers do not consider this a serious disadvantage, however, as they believe that the majority of tank battles will be fought within this range. One novel feature of the T-62 is the automatic ejection system which disposes of the spent cartridge cases through a hatch in the back of the turret, though it is not unknown for the hot and smoking cartridge cases to be thrown around the turret much to the dismay of the crew! For a tank of 36 tons, the T-62 has excellent firepower and protection. It has seen extensive combat in the Arab-Israeli wars.

Left: T-62. / Tass

Below: T-62, the tank on the left is laying a smoke screen (by injecting vaporised diesel fuel into the exhaust).
/ Tass





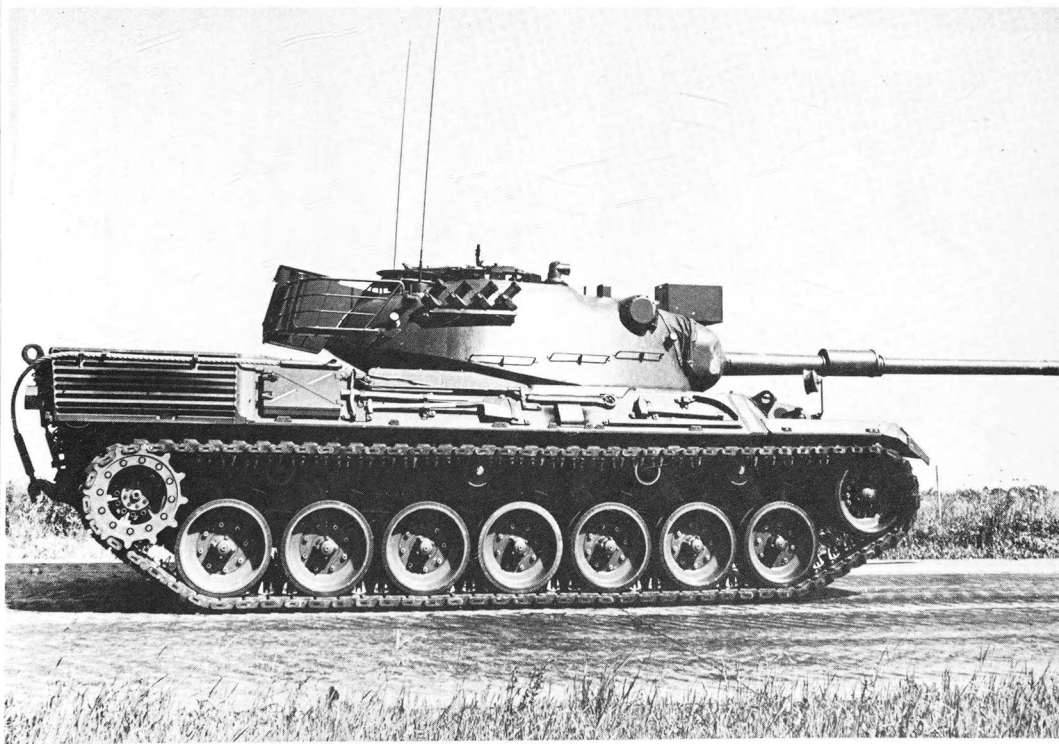
Leopard I

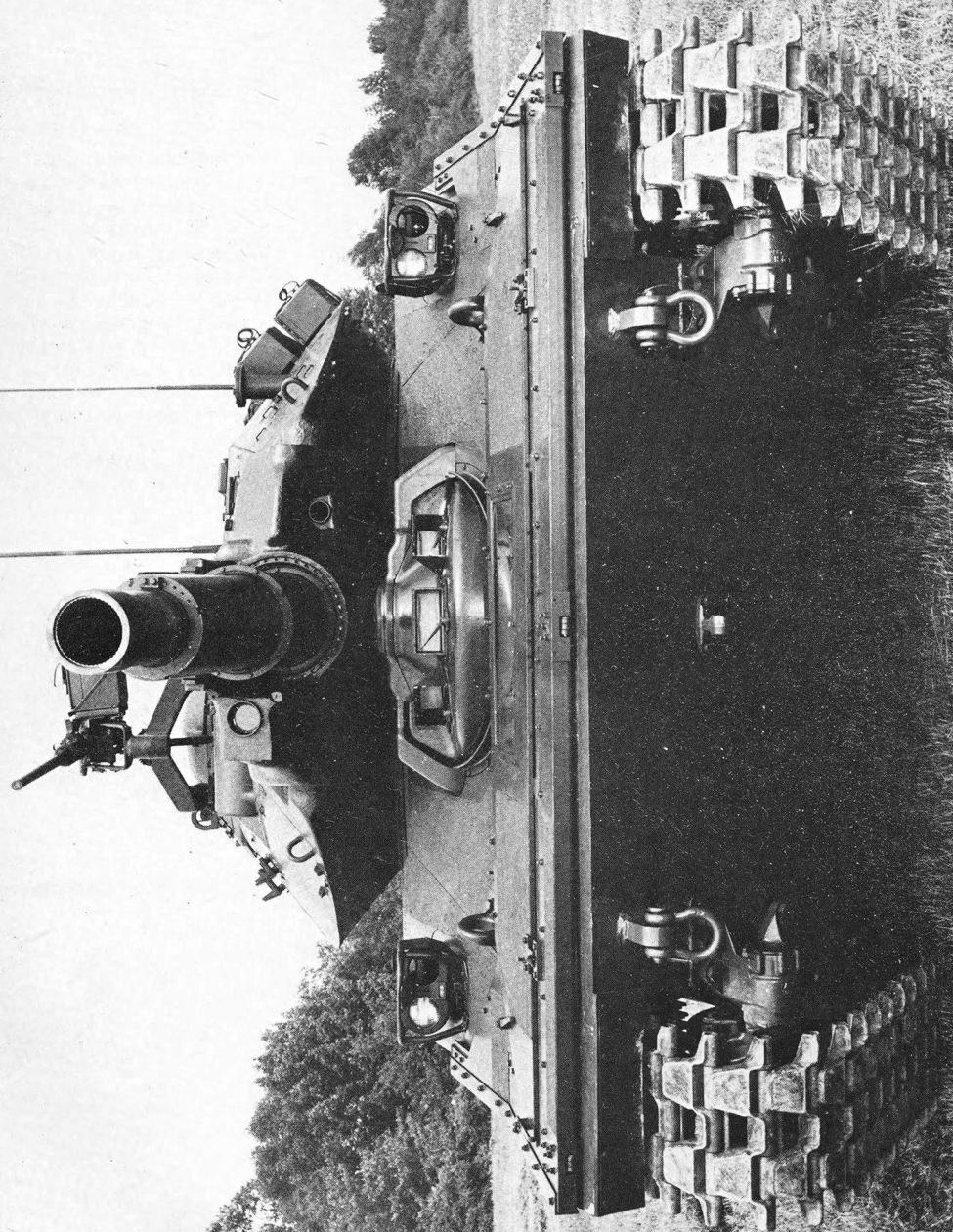
Germany 1965

The first tank to be built in Germany since World War II is the Leopard I which has proved to be a most successful design. A total of 26 pilot and 50 pre-production vehicles were built and extensively tested before production began, to ensure maximum reliability. Armed with the British L7 105mm gun and powered by an 830hp MTU diesel engine of high acceleration and low fuel consumption, the Leopard relies on its speed, low silhouette and mobility for protection. Ease of maintenance is excellent and it is possible to replace the complete powerpack (engine, gearbox, cooling fans, etc) in less than half an hour. Indeed the fastest recorded time is 11 minutes from the time the tank stopped to the time it restarted with a new engine. To keep abreast of current developments, the Leopard has undergone numerous improvements including a new turret of spaced armour, a laser rangefinder, stabilisation of the main armament and passive night sights. It is currently being manufactured at the rate of eight a month by Krauss Maffei of Munich. Over 6,000 Leopards have been built to date and they are in service with seven NATO countries and Australia.

Left: Leopard 1A3. / Krauss Maffei

Below: Leopard 1A1. / Krauss Maffei





M551 Sheridan

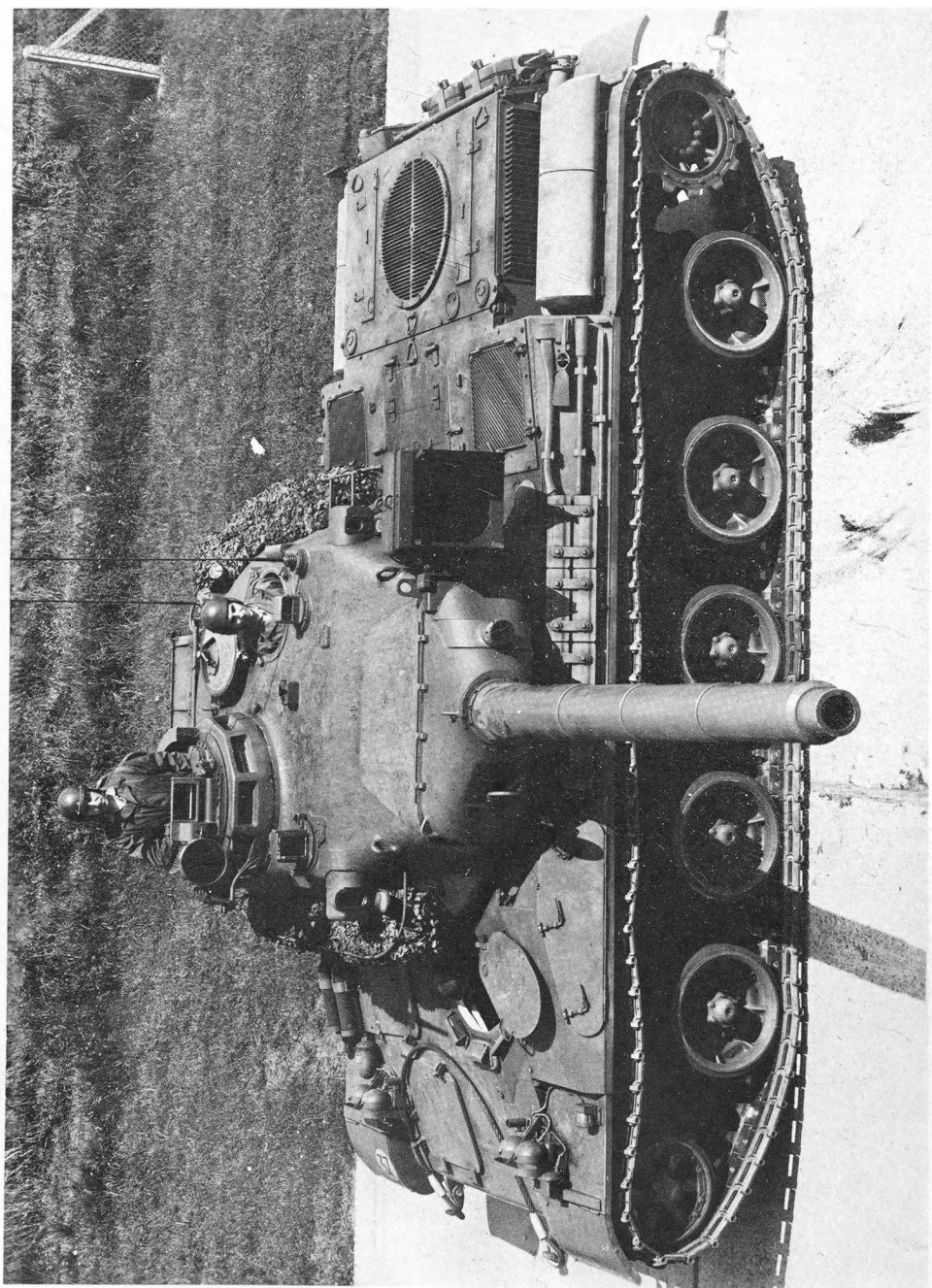
USA 1966

The Sheridan is one of the most interesting AFVs to emerge in recent years on account of its heavy armament. It was designed to replace the M41 Light Tank and the M56 self-propelled anti-tank gun and to undertake a number of roles as its full designation implies — Armoured Reconnaissance Airborne Assault Vehicle. By the extensive use of aluminium alloys for the hull armour and automotive components, the weight has been limited to 16 tons and the Sheridan is air-portable and also amphibious by means of a flotation screen. The tank is powered by a 300hp six-cylinder Detroit Diesel engine at a maximum speed of 70km/hr and in water, propelled by its tracks, at 5.8km/hr. The outstanding feature of this vehicle is the M81 152mm gun/missile launcher which fires a conventional type of ammunition with a combustible cartridge case, and a Shillelagh guided missile which can destroy all known tanks to a maximum range of 3,000m. In 1969, the Sheridan was committed to combat in Vietnam where a number of deficiencies became apparent, the most serious being its vulnerability to mine damage. The Sheridan has not been an unqualified success but will be remembered as a bold experiment to increase the firepower of light reconnaissance vehicles.

Left: The M81 152mm gun/missile launcher of the M551 Sheridan.
/ US Army

Below: Sheridan of the 11th Armoured Cavalry Regiment, South Vietnam, 1969.





AMX-30

France 1967

In 1957 the French and German armies agreed to develop a 'European tank' which would be adopted by both nations. The specification called for a tank weighing 30 tons with the emphasis on firepower and mobility at the expense of armour protection. In the event the Germans decided to adopt the Leopard and the French the AMX-30. The most notable feature of the AMX-30 is the 105mm gun that fires a non-rotating hollow charge round—the OBUS-G. This system combines the advantages of the hollow charge principle with its excellent penetration irrespective of range and the accuracy of a rifled gun. Co-axial armament is either a 12.7mm machine gun or a 20mm automatic cannon with a maximum elevation of 40 degrees so that helicopters and low flying aircraft may be engaged. The AMX-30 has excellent observation equipment with periscopes for all crew members and a contra-rotating cupola for the commander. At 36 tons it is the lightest of the current generation of Main Battle Tanks. It is powered by a 720hp Hispano-Suiza 110 diesel engine with a power to weight ratio of 20hp/ton and a maximum speed of 65km/hr. The AMX-30 is in service with 13 countries and a simplified version is available for export lacking such features as night fighting equipment and NBC protection. Currently under development is the AMX-32 which will incorporate new technology armour and a 120mm smooth-bore gun.

Left: AMX-30. / *ECP Armées*

Below: AMX-30 fitted with deep wading snorkel equipment. / *ECP Armées*





Contrary to the European school of thought, which advocated high mobility, the Chieftain improved on those features of its predecessor the Centurion that had proved so successful — armour and firepower. Armour protection has been improved by the excellent ballistic shape of the turret front and glacis plate. This has been achieved by eliminating the external mantlet for the main armament and by adopting a reclining position for the driver, which also reduces the overall height of the vehicle. The L11 120mm gun of Chieftain is superior to any other current tank gun and coupled with the laser rangefinder is highly effective out to ranges in excess of 3,000m. The 120mm ammunition is unusual in that projectile and charge are separate. This simplifies the task of loading within the cramped confines of the turret and allows safer stowage. On firing the bagged charges are completely combustible thus eliminating expended cartridge cases in the turret and the problem of their disposal and noxious fumes. In common with contemporary Main Battle Tanks Chieftain can operate in conditions of NBC (Nuclear, Biological, Chemical) contamination and is fitted with infra-red equipment for night fighting. The Chieftain is also in service with the armed forces of Iran and Kuwait. For a tank that was conceived in the mid-1950s its design showed remarkable foresight and it is interesting to note that the generation of Western tanks currently entering service all have a similar configuration in terms of weight and calibre of main armament as the Chieftain.

Left: The business end of Chieftain's powerful 120mm gun. / MOD

Below: Chieftain Mark 3 of the 4th Royal Tank Regiment beside Berlin's Brandenburg Gate. / MOD





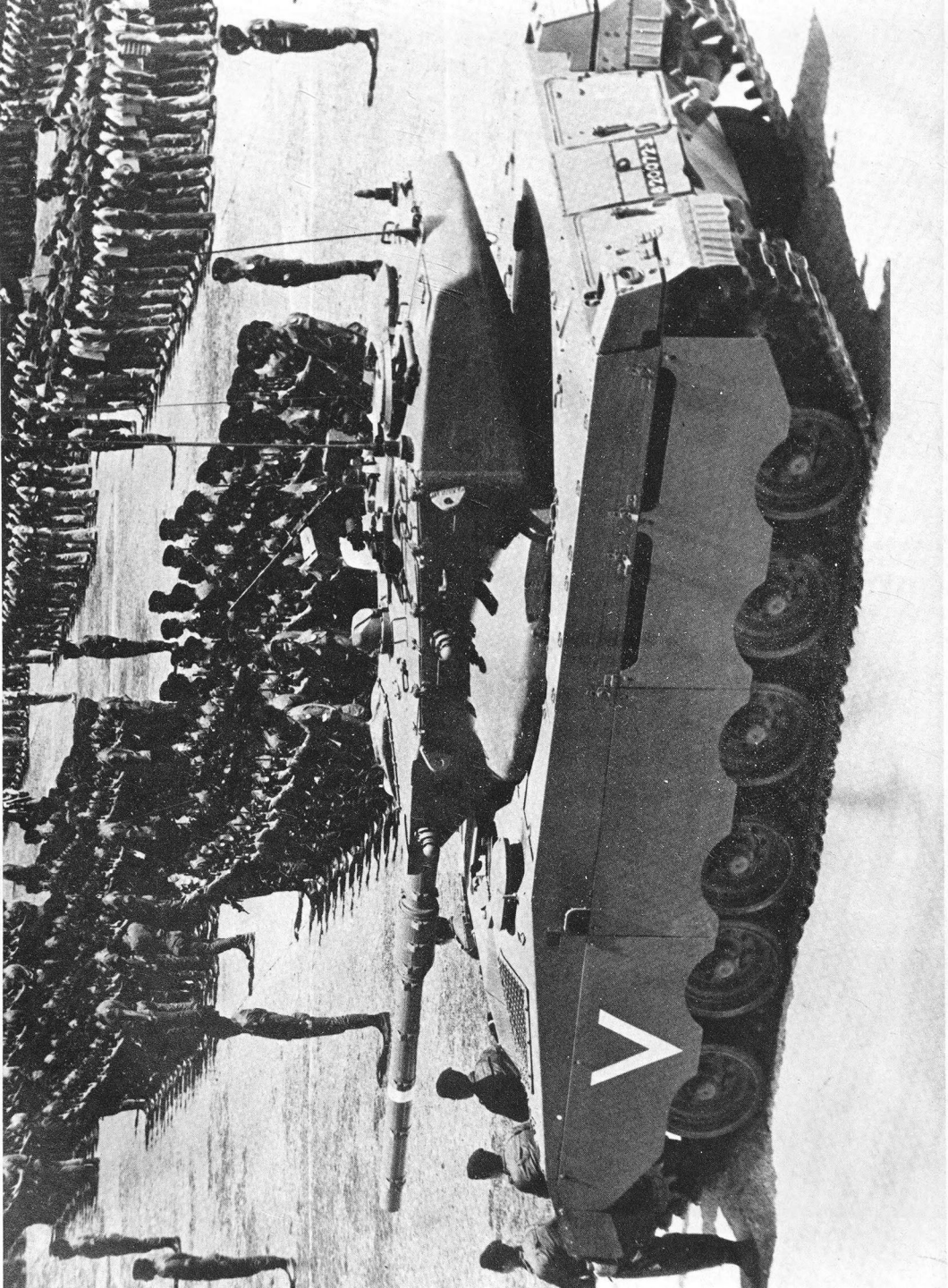
T-72

USSR 1973

The T-72 is the current Soviet MBT (Main Battle Tank) and represents a significant departure from the evolutionary line of Soviet tanks that began with the T-34. A development of the M-1970 DVINA experimental tank, the T-72 embodies a new suspension similar to Western systems, and a 900hp engine to replace the venerable V2 diesel that powered the T-34 to the T-62. The outstanding feature of the T-72 is the exceptionally compact turret mounting a powerful 125mm smooth bore gun with an automatic loading system which reduces the crew to three men. The low silhouette, however, has so restricted the internal volume that the crew have to be short in stature — the average height being 5ft 2in (1.58m). An integral bulldozer blade is mounted on the lower hull plate for digging fire positions and clearing battlefield obstacles. A novel feature is the spring loaded skirt plates that project forward from the hull sides at an angle of 60deg and give protection over the frontal arc from chemical energy rounds and guided missiles. The T-72 has both a laser and a stereoscopic rangefinder which are a major advance over previous fire control systems. In production in the Soviet Union and Poland, several thousand T-72s are in service with the Group of Soviet Ground Forces in East Germany.

Left and below: T-72s rumble across Red Square during 60th Bolshevik Revolution Anniversary Parade. / *Tass (1)*





Merkava

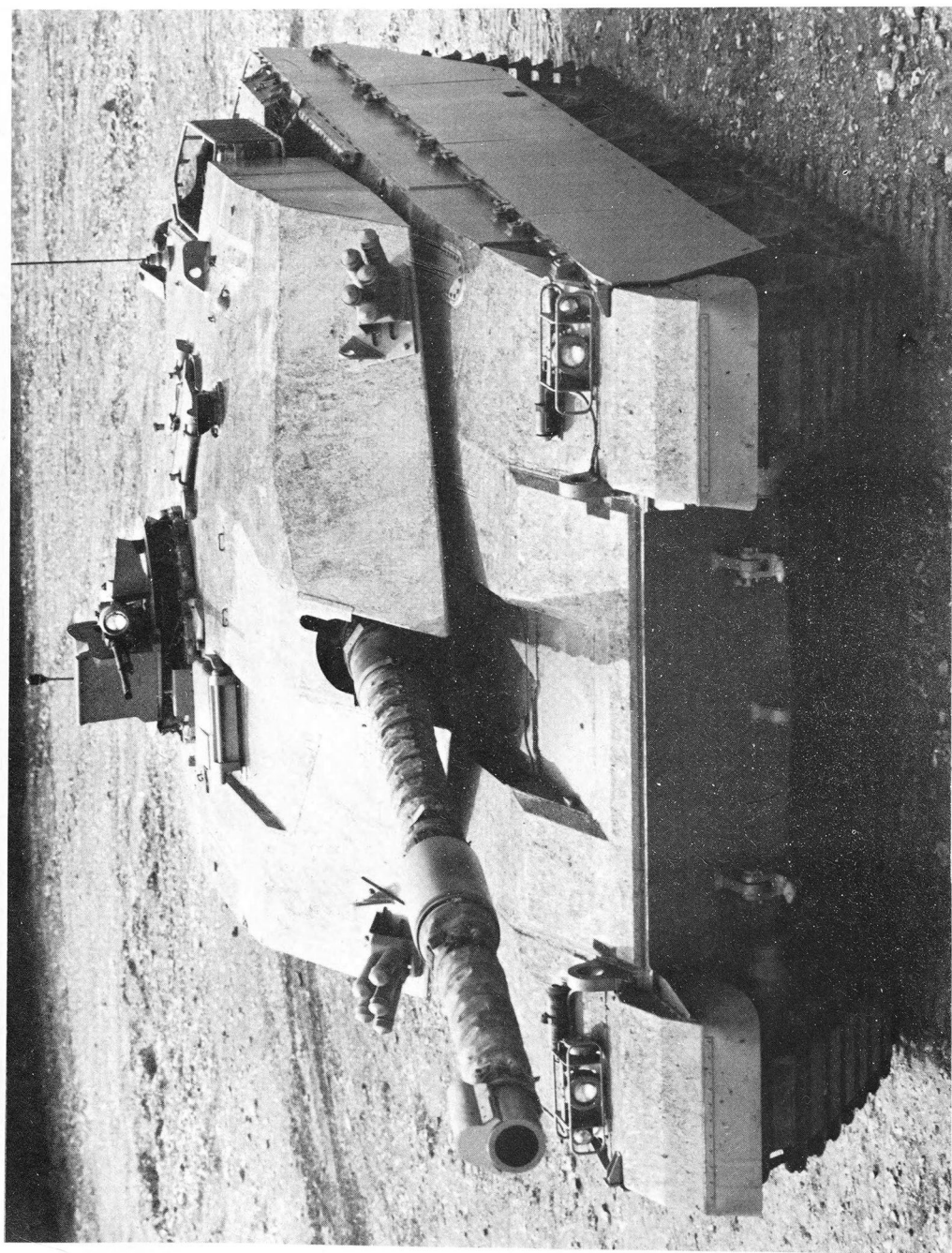
Israel 1978

In 1976 the Israeli Army unveiled its first indigenously produced Main Battle Tank. The Merkava, which is Hebrew for Chariot, has been specifically designed for the Middle East theatre of operations. As a result of the fearful casualties amongst Israeli tank crews during the Yom Kippur War of 1973, great emphasis has been laid on crew survival. The 56-ton Merkava is powered by a 900hp Teledyne Continental V12 diesel engine which is mounted in the front of the tank thus affording increased protection to the crew. The narrow profile wedge shaped turret is constructed of sharply angled spaced armour at the front and is armed with the Israeli manufactured British 105mm gun linked to a laser rangefinder and computerised fire control system. An interesting innovation is the tank's ability, by means of removing the ammunition stowage bins in the back, to carry a number of infantrymen or evacuate battle casualties. The rear doors also greatly simplify the replenishment of ammunition on the battlefield and allow the crew to escape in an emergency with minimum exposure to enemy fire. The Merkava represents a remarkable achievement for the Israeli automotive industry which little more than a decade ago was only capable of assembling imported family saloon car kits.

Left: Merkava, showing the rear access doors for crew and ammunition replenishment. / Israeli Army

Below: Merkava. / Israeli Army





In 1976 the British government announced the development of a completely new form of armour for AFVs. Known as 'Chobham armour' it gives greatly enhanced protection against all types of armour piercing projectiles and is especially effective against chemical energy rounds which form the basis of all infantry anti-tank weapons and guided missiles. This armour is incorporated in an upgraded Chieftain designated FV4030 which was originally developed for the Iranian Army. It is powered by the new 1,200hp Rolls-Royce CV-12TCA diesel engine and David Brown TN-37 automatic transmission which combined as a single unit powerpack allows rapid replacement in the field. A notable feature of the CV-12 is the driver's ability to control the engine output by selecting either an 800hp 'cruise' rating or 1,200hp 'battle' rating, giving greater fuel economy and reliability. The FV4030 is armed with a new 120mm rifled gun coupled to the Improved Fire Control System and a combined day/night sight for the commander. Such a system ensures superb accuracy and very rapid engagement times under any conditions, day or night. The FV4030 is one of the most formidable battle tanks for the 1980s and being based on proven technology is certainly the most cost effective.

Left: FV4030.

Below: A modified Chieftain fitted with Chobham Armour. / MOD





Leopard 2

Germany 1980

In 1967, Porsche began the design of the Leopard 2 to replace the ageing fleet of M48A2C Pattons and 90mm Jagdpanzer Kanone self-propelled guns. By 1975 17 prototypes had been built and thoroughly tested. (They covered 40,000 miles and fired 5,000 rounds in trials). Beginning in October 1979, 1,800 Leopard 2s are to be built for the German Army by Krauss Maffei and Mak of Kiel. The Leopard 2 is armed with the Rheinmetall 120mm smooth bore gun which fires only two types of combustible cartridge ammunition, an APFSDS projectile and a general purpose High Explosive Anti-Tank round, thus simplifying gunnery operation and logistic resupply. The effectiveness of the gun is enhanced by the sophisticated Hughes electronic fire control system with stabilised sights for the gunner and commander to facilitate target acquisition on the move. The armour of the turret and hull is spaced and laminated affording excellent protection to the crew. The Leopard 2 is powered by a 1,500hp MTU MB873 turbocharged diesel engine, which, coupled with the tank's advanced torsion bar suspension, permits a high sustained cross-country speed; twice that of the Leopard I which is amongst the fastest in service. This foremost design represents an outstanding combination of firepower, protection and mobility.

Left: Leopard 2. / Krauss Maffei

Below: Leopard 2. / Krauss Maffei





M-1 General Abrams

USA 1981

Early in 1973 the two giant automotive corporations, Chrysler and General Motors, were invited to produce competitive prototypes of a tank to succeed the ill-fated MBT-70 project which had proved too costly and sophisticated to manufacture. After extensive trials the Chrysler design, incorporating the AVCO Lycoming AGT-1500 gas turbine engine, was chosen for production. The Abrams/M1 is the first tank to be powered solely by a gas turbine engine which has a number of advantages over conventional diesels, including simpler maintenance due to fewer moving parts, lower levels of smoke and noise emissions and superior acceleration. Developing 1,500hp the 56 ton tank can accelerate from 0 to 20mph in six seconds and with its advanced torsion bar suspension travel cross-country at speeds three times that of the M60. For greater survivability the M-1 embodies a novel system of ammunition stowage. The rounds are stored in the rear of the turret in armoured bins which if penetrated will explode outwards through detachable 'blow out' panels in the roof, thus protecting the crew from an internal explosion. Production is to commence in 1980 and the first M-1s are to be armed with the M68 105mm gun firing improved ammunition but later models will mount the German 120mm smooth bore gun.

Left: Chrysler prototype of XM-1.
/ Chrysler Corporation

Below: Pre-production pilot model of XM-1/General Abrams. */ US Army*



Data Tables

	Weight (tons)	Length (ft in)	Width (ft in)	Height (ft in)	Armour (mm) max/min	Engine (bhp)	Speed (mph)	Crew	Armament
Tank Mark I Male	28	32 6	13 9	8 0	10/ 6	Daimler 6-cylinder 105	3.7	8	2 × 6pdr 4 × MG
Tank Mark IV Female	28	26 5	13 9	8 2	12/ 6	Daimler 6-cylinder 105	3.7	8	6 × MG
Renault FT17	6.5	16 5	5 9	6 7	22/ 6	Renault 4-cylinder 35	4.8	2	1 × 37mm or 1 × MG
A7V	30	24 1	10 0½	10 10	30/15	2 × Daimler 4-cylinder 200	8	18	1 × 57mm 6 × MG
Vickers Light Tank Mark VI	5.2	12 11	6 9	7 4	14/ 4	Meadows 6-cylinder 88	35	3	2 × MG
Vickers 6 ton Tank Type A	7	15 0	7 11	6 10	14/ 5	Armstrong- Sidleley 4-cylinder 80	22	3	2 × MG



	Weight (tons)	Length (ft in)	Width (ft in)	Height (ft in)	Armour (mm) max/min	Engine (bhp)	Speed (mph)	Crew	Armament
Christie M1931 T3 Medium Tank	11	18 0	7 4	7 6	15/ 4	Liberty V-12 338	46 (wheels) 27 (tracks)	3	1 × 37mm 1 × MG
BT-7-2	14.2	18 8	7 11	7 6	22/ 6	Liberty 12-cylinder 450	45 (W) 33 (T)	3	1 × 45mm 2 × MG
Pzkwfw I Ausf B	5.8	14 7	6 8	5 6	13/ 7	Krupp 4-cylinder 100	25	2	2 × MG
Pzkwfw II	9.5	16 0	7 1	6 9	30/10	Maybach 6-cylinder 130	25	3	1 × 20mm 1 × MG
SOMUA S-35	19.7	17 11	6 11	8 10	56/41	SOMUA V-8 190	23	3	1 × 47mm 2 × MG
Char B1-bis	32	20 11	8 3	9 3	60/40	Renault 6-cylinder 307	17	4	1 × 75mm 1 × 47mm 2 × MG
Pzkwfw III Ausf E	20	18 0	9 6	8 0	30/10	Maybach V-12 300	25	5	1 × 37mm or 1 × 50mm 2 × MG
LT38/ Pzkwfw 38(t)	9	16 1	7 1	7 3	35/12	Skoda 6-cylinder 120	25	4	1 × 37.2mm or 1 × 37mm 2 × MG
Chi-Ha	14.3	18 0	7 7½	7 6	25/10	Mitsubishi V12 Diesel 170	23	4	1 × 57mm 2 × MG
Pzkwfw IV Ausf F2	23.6	22 2	9 7	8 6	50/10	Maybach V-12 300	25	5	1 × 75mm 2 × MG

Left: A formation of BT-2s during the 1930s, in the background are T-26As, which were the Soviet version of the Vickers Six Tonner. / *Novosti*

Right: M4A4 Sherman employed as mobile artillery, a frequent role in the late stages of the war.



	Weight (tons)	Length (ft in)	Width (ft in)	Height (ft in)	Armour (mm) max/min	Engine (bhp)	Speed (mph)	Crew	Armament
Matilda	26.5	18 5	8 6	8 0	73/13	2×AEC Diesel 174	15	4	1×2pdr 1×MG
KV-1	46.4	22 7	10 8½	8 9	100/30	V-2 Diesel V-12 550	22	5	1×76.2mm 3×MG
M13/40	14	16 2	7 3	7 10	42/ 6	Fiat-SPA 8-cylinder Diesel 125	20	4	1×47mm 3 or 4×MG
Valentine Mark II	16	17 9	8 7½	7 5½	65/ 8	AEC Diesel 131	15	3	1×2pdr 1×MG
Crusader	19	19 8	8 8	7 4	40/ 7	Nuffield Liberty 340	27	5	1×2pdr 2×MG
M3 Stuart	13.5	14 10¾	7 4	8 3	51/10	Continental W-670 250	36	4	1×37mm 1-3×MG
T-34/76	26.3	20 0	9 9½	9 7	45/14	V-2-34 Diesel V-12 450	31	4	1×76.2mm 2×MG
T-34/85	32.0	24 9	9 7	7 10	60/18	V-2-34 Diesel V-12 500	32	5	1×85mm 2×MG
M3 Medium Grant Mark I	29	18 6	8 11	10 3	37/12	Wright Continental 9-cylinder 340	26	6	1×75mm 1×37mm 4×MG
Churchill Mark VI	38.5	24 5	10 8	8 2	102/16	Bedford 12-cylinder 350	15	5	1×75mm 2×MG
M4A3 Medium Sherman	34.25	20 7	8 9	9 0	75/12	Ford GAA 500	26	4	1×75mm 2×MG
Tiger I Ausf E	56	27 9	12 3	9 4	110/26	Maybach V-12 700	24	5	1×88mm 2×MG
Cromwell Mark IV	27	20 10	10 0	9 3¾	76/10	Meteor V-12 600	40 (32)	5	1×75mm 2×MG
Panther Ausf A	45.5	22 6	10 10	9 8	120/20	Maybach V-12 700	29	5	1×75mm 2×MG



Left: Centurion Mark 3 of A Squadron 8th King's Royal Irish Hussars crossing a pontoon bridge over the Imjin River, Korea, 1951. / IWM

Above right: T-59s of the Chinese Army. The T-59 is the Chinese copy of the T-54.

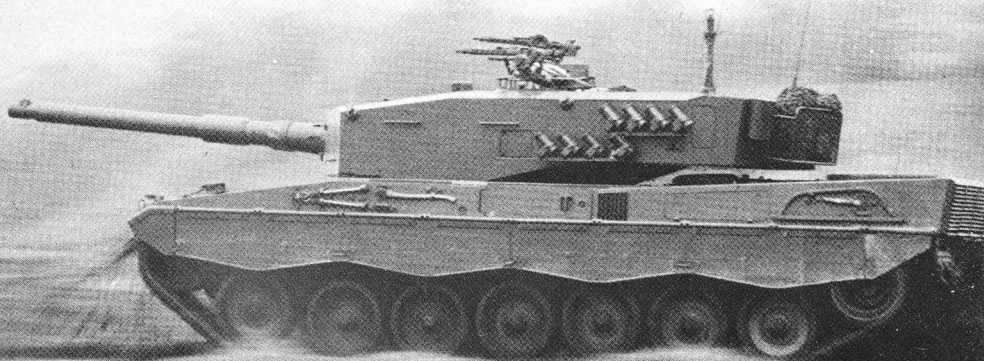


	Weight (tons)	Length (ft in)	Width (ft in)	Height (ft in)	Armour (mm) max/min	Engine (bhp)	Speed (mph)	Crew	Armament
IS-2	44	32 9	10 6	8 11	132/19	V-2 IS V-12 520	23	4	1×122mm 2×MG
M4A3E8	36	24 8	8 9	9 8	60/18	Ford GAA-111 V-8 450	30	5	1×76mm 3×MG
Tiger II	68	33 9	12 3	10 1	185/40	Maybach V-12 600	24	5	1×88mm 2×MG
M24 Chaffee	18	18 0	9 8	8 2	38/10	2×Cadillac V-8 220	34	5	1×75mm 3×MG
M26 Pershing	42	28 10	11 6	9 1	102/13	Ford GAF V-8 500	20	5	1×90mm 3×MG
IS-3	45.8	32 9	10 6	8 11	230/20	V-2-IS 519	23	4	1×122mm 2×MG
Centurion Mark 3	49	32 3	11 1	9 8	152/18	Meteor V-12 635	21.5	4	1×20pdr 1×MG
T-54	35	29 6	10 9	7 10	100/12	V54G Diesel 520	34	4	1×100mm 3×MG
M47 Patton	46	27 9	11 6	9 8	115/18	Continental 12-cylinder 810	35	5	1×90mm 3×MG
PT-76	14	25 0	10 4	7 2	14/6	Model V-6 6-cylinder 240	27	3	1×76.2mm 1×MG

	Weight (tons)	Length (ft in)	Width (ft in)	Height (ft in)	Armour (mm) max/min	Engine (bhp)	Speed (mph)	Crew	Armament
M48A3 Patton	45	24 5	11 11	10 3	120/18	Continental * 12-cylinder 750	30	4	1 × 90mm 2 × MG
AMX-13	14.7	20 9	8 3	7 4	40/10	SOFAM 8-cylinder 250	40	3	1 × 75mm 1 × MG
M60A1	48	30 11	11 11	10 4	120/18	Continental * 12-cylinder 750	35	4	1 × 105mm 2 × MG
T-62	36	32 0	11 0	7 10	170/20	V2-62 * 12-cylinder 700	31	4	1 × 115mm 2 × MG
Leopard 1A3	42.4	31 4	10 8	8 8	70/10	MTU 10-cylinder 830	40	4	1 × 105mm 2 × MG
Sheridan	16	20 8	9 3	9 8	—	Detriot * 300	45	4	1 × 152mm
AMX-30	36	31 1	10 2	8 4	—	Hispano-Suiza * 12-cylinder 720	40	4	1 × 105mm 1 × 20mm + IMG or 2 × MG
Chieftain Mark 5	54	35 5	12 0	9 6	—	Leyland L60 * 750	30	4	1 × 120mm 3 × MG
T-72	41	33 1	10 10	8 1	—	Diesel 900	37	3	1 × 125mm 2 × MG
Merkava	56	—	—	—	—	Continental * V12 900	25	4	1 × 105mm 3 × MG
FV4030	—	—	—	—	—	Rolls-Royce * CV12 TCA 1,200	—	4	1 × 120mm 2 × MG
Leopard 2	54.5	31 11	11 7	8 2	—	MTU MB873 * 1,500	42	4	1 × 120mm 3 × MG
M-1/ General Abrams	56	25 7 (hull)	11 8	8 8½	—	Avco-Lycoming Gas Turbine 1,500	45	4	1 × 105mm or 1 × 120mm 3 × MG

* Diesel

Leopard 2 displaying its superb cross country performance. / Krauss Maffei



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